

IRON AGE

THE NATIONAL METALWORKING WEEKLY

November 16, 1950

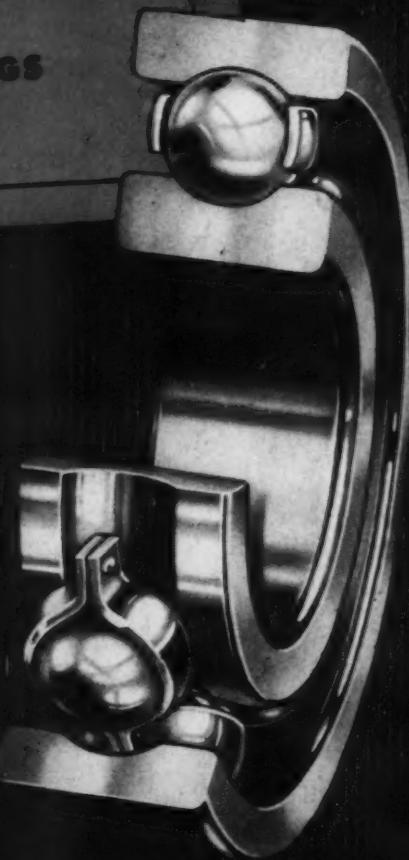
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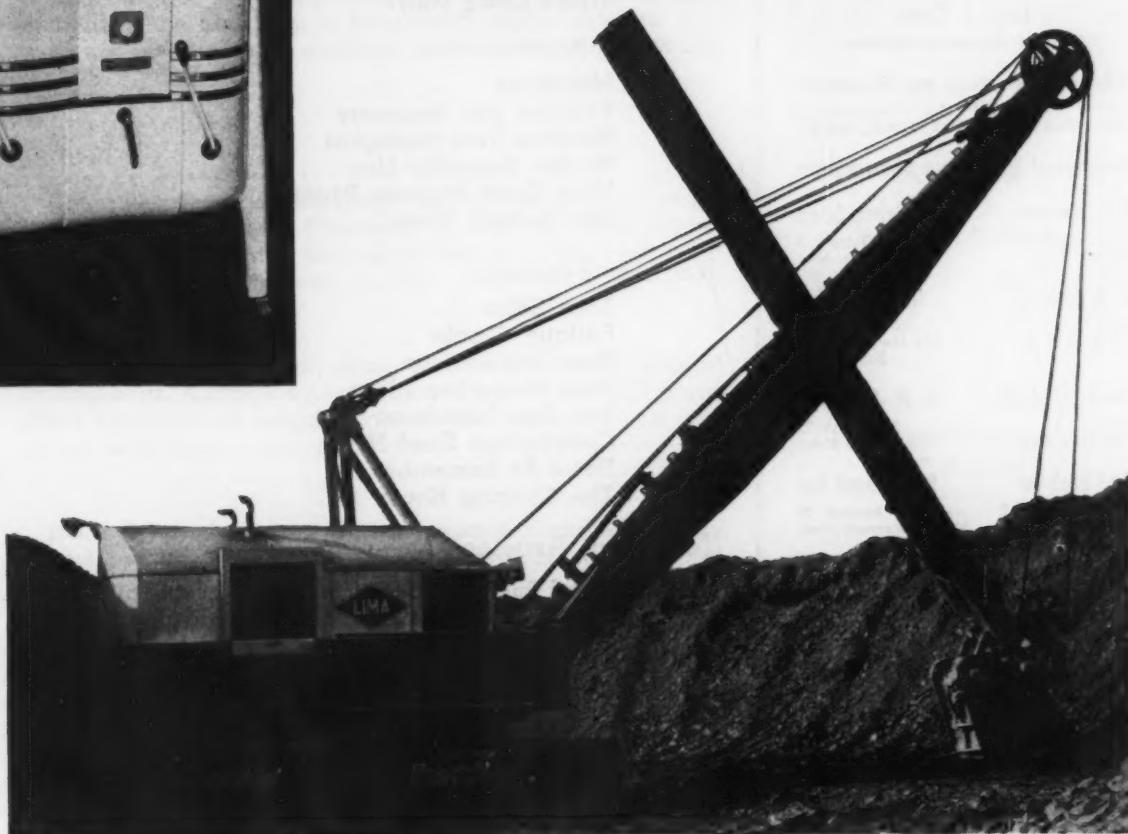
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One of the Publications
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THE IRON AGE

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Special Article



It's not enough for a company to treat its workers fairly. It does no good if the workers and public don't understand or believe the treatment is fair. Good public relations policies are invaluable in explaining the company's position.—p. 79.

Issue Highlights



Caterpillar Tractor mass-produces over 200 different gears in a single department. Flexibility of machines and department layout, reference files of production data, help keep production highly efficient.—p. 83.



Many companies fear short runs don't justify special tooling costs. A company, where few runs exceed 300 parts, offers examples of setups, fixtures and tooling which pay off on such short runs.—p. 87.



Jones & Laughlin's decision to expand tinplate capacity 60 pct means the Pittsburgh District will hold a decided edge in tinplate output despite other large expansions planned in other areas.—p. 99.



An integrated steel mill for New England will probably be built within the next 4 years with the aid of government funds. Stuart Symington, NSRB chief, hopes "quick decision on the matter may be reached."—p. 101.



Warehouses are due to get a proportionate share (based on 9-mo. shipments) of steel after other priorities have been filled. But on vital flat-rolled steel this will amount to only about 6 pct of output. Of course their DO sales will also be replaced.—p. 102.



Towering foundry backlogs are really putting the heat on the merchant pig iron market. Foundry scrap and pig iron prices have been advancing, but supplies are still tight and foreign iron is being actively sought.—p. 103.



The magnesium industry is again poised to take up fast defense production. Commercial applications of the metal may be crowded out temporarily. This may be serious now because the industry has pushed itself to the doorstep of big business.—p. 106.

Coming Next Week



Conventional classification of heat-treated, high-strength steels according to hardenability is incomplete. Static and notch bar characteristics of high-strength steels reveal relationships between strength and ductility, and chemistry and structure.

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Indexed in the Industrial Arts Index and the Engineering Index. Published every Thursday by the CHILTON CO. (INC.), Chestnut and 56th Sts., Philadelphia 39, Pa. Entered as second class matter Nov. 8, 1932, at the Post Office at Philadelphia under act of March 3, 1879. \$8 yearly in United States, its territories and Canada; other Western Hemisphere Countries \$15; other Foreign Countries \$25 per year. Single Copies 35¢. Annual Review Number, \$2.00.

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N AGE November 16, 1950

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Editorial

INDUSTRY VIEWPOINTS

Who's Crazy Now?

THE left hand doesn't know what the right hand does these days. We have a democracy yet we don't. We have free enterprise yet we are told what we should do—and what we can't do.

Paradoxes no longer frighten us. Black is white and white is black. It depends on whose back is being scratched. Or who says it. Or who benefits.

The latest psychology is used on the citizens to fuzz the real issues. The cost is hidden with so many sweet and soul stirring words and phrases that those who pay never see that they do.

If anyone tells who pays he is labeled a fuddy-duddy, or a roadblock to progress, or a reactionary, or a jerk.

We have high butter prices—but the government has butter to spread on everyone's bread; paid for with the money taken from those who now pay higher prices.

Five years after World War II we are still laying out a defense plan but we thought it was all laid out ready for "instant implementation."

People who ought to know better hold the same views as the commies and play into their hands. If you point this out you are a dirty Fascist. If you don't you are an unpatriotic bum.

We should protect Formosa; no we shouldn't, yes we should; no we shouldn't. While the State Dept. tries to make up its mind the commies find new places to stick the knife.

We tie wages to a questionable cost of living index. When the index goes up because business has to raise prices to pay bigger wages we wonder why. Then we raise wages again because the index goes up.

We face the greatest crisis in American history and the most formidable enemy in world history. But we also want our fur coats, our shiny gadgets, our luxuries, our mediocre leaders, our nice cozy and wishful thinking that all is well.

Our national bill for bubble gum runs into the millions, yet hospitals, private family aid, medical research and churches must beg for money to carry on.

The Administration dilly dallied before election. After election the hard facts are told—much, much too late.

Men say one thing in public and just the opposite in private. "We don't need controls," they say in public—in private they plan for them.

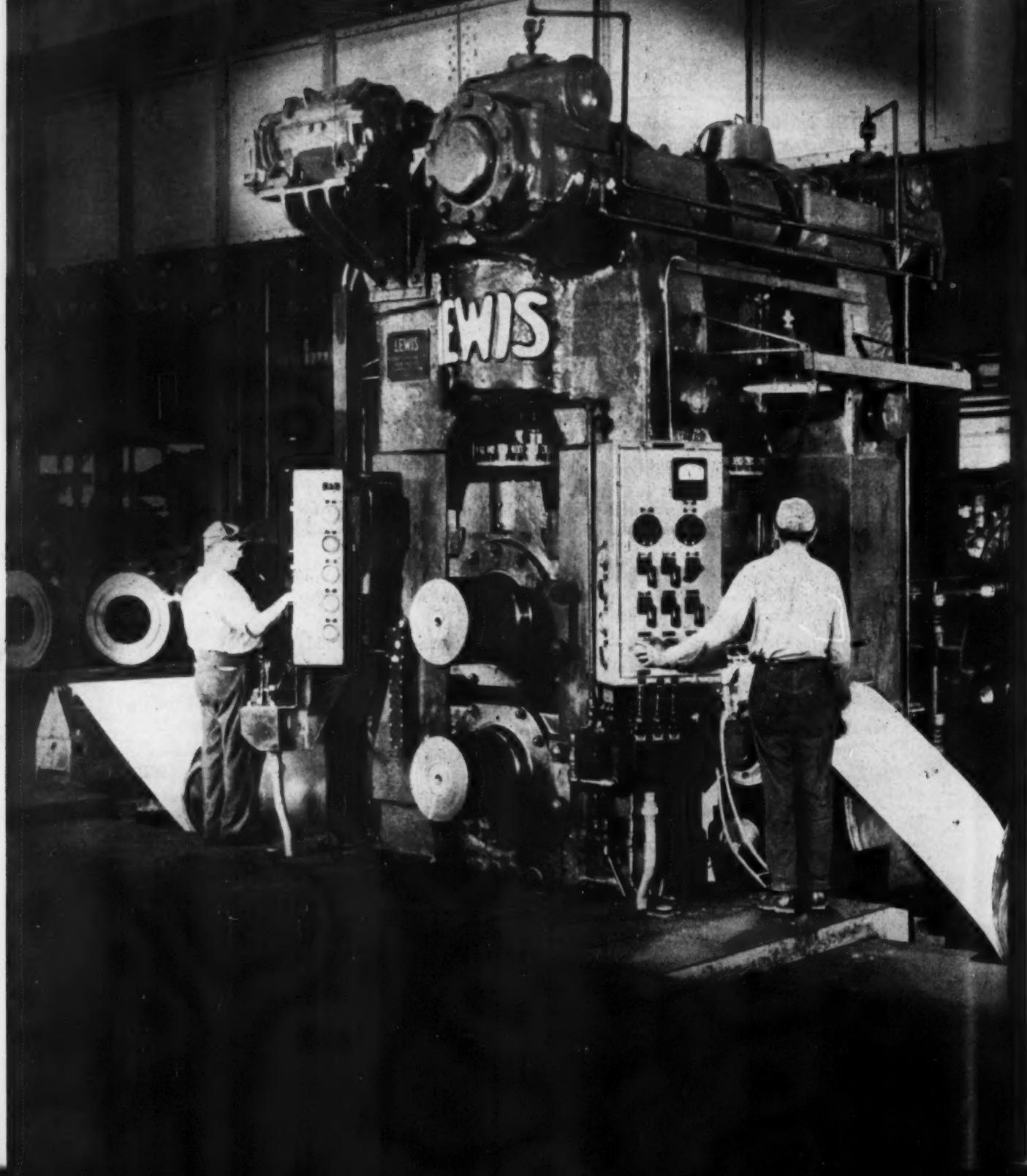
Men sound off in their clubs and to their wives and children. In public they get mike fright, stage fright or just plain fright while the vote getters and slick talkers take the ball and run with it.

All right, who's crazy now—and who's going to do something about it unless you, and you, and you, and you do?

Tom C. Campbell

Editor

LEWIS

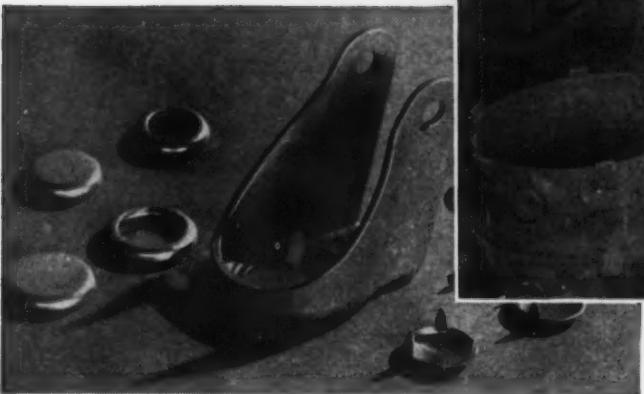


Not

NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

- The order limiting aluminum shipments to nonmilitary consumers, while not unexpected, is exceedingly distasteful to industry, even though the excess is headed for the strategic stockpile. A year ago, when aluminum was more plentiful and prices lower, the industry urged the government to stockpile the metal. There is a lot of aluminum reduction capacity in this country which is still inactivated. Canadian offers of Al for stockpile were rejected a short time ago.
- The soaring price of tin (it has more than doubled since Korea) is bad news for tinplate consumers. Although tinplate prices are scheduled a year in advance, the current record price of tin will mean big boosts in tinplate for next year. High prices for tinplate could dictate a return to black (blackplate) cans.
- Recent studies show that electric power from atomic energy may not be as economically impractical as has been thought. Figures of between 3 and 10 mils per kilowatt hour are now being mentioned.
- A new alloy of pure molybdenum containing 1.00 pct vanadium is being tested. The molybdenum vanadium alloy is malleable at all hot working temperatures while pure molybdenum shows brittleness in certain temperature ranges.
- A new smokeless booster rocket, JATO, has been developed under Navy contracts. The new unit provides a thrust equal to present types with considerably less weight. All 3 services will use the new unit.
- Wire brushing of rusty galvanized roofing prior to zinc painting is unnecessary. The repainted sheets last longer if the rusted surface is not removed prior to spraying with metallic zinc paint.
- The Ordnance Dept. would like to use pressed iron powder rotating bands for shells. During World War II the process was explored and used in a limited way. The chief bottleneck now in the way of wide use of such bands is a steady supply of cheap iron powder of consistent size, hardness and analysis.
- President of large trailer manufacturing company has suggested that the trailer industry collectively buy a steel mill to insure continued supply of needed items. The trouble is that such a mill would have to be capable of rolling a large variety of sizes in bars, shapes strip and sheets and that there are no such mills for sale.
- NPA's order M-6 assuring steel for warehouses is good news for many small manufacturers, since it assures them a proportionate share based on shipments during the first 9 months. But the hitch is that their share comes after other priorities have been subtracted. When 45 to 50 pct of flat-rolled steel is taken by other priorities, by June 1951, warehouses and their customers will get only their proportionate share of the remaining 50 to 55 pct of flat-rolled steel.
- Electroplaters are turning to tin-zinc alloy plating because of the current acute shortage of cadmium. Developed in England, the use of an 80 pct Sn-20 pct Zn alloy gives good corrosion resistance, excellent solderability, and is economical to deposit.
- Chevrolet in its Flint operations use about 3 tons of metal per employee per month. Recently it was disclosed that Chevrolet was using as much per employee per month for civilian production as is used in an entire year for military production.



Bassick Co., Bridgeport, Conn., makers of casters and hardware, rely on Homocarb furnaces such as the one above for all cyaniding. Left: typical samples of Bassick production.

Bassick Co. cuts cyaniding costs 2/3 rds by switching to Homocarb heat treating

By installing three Homocarb furnaces to replace the salt pots formerly used, the Bassick Company has not only reduced cyaniding costs per pound to one third of the previous amount, but in addition, it is now getting 59% more heat-treating production from the same floor space. Big, efficient Homocarb furnaces handle over 100 tons a month production of hardened small casters and hardware parts with ease . . . eliminating the need for sending a portion of the work to outside heat treaters.

In addition to these benefits, the company finds that the quality of case is much more closely controlled with the Homocarb method. Case averages about 5 thousandths deep; is uniformly hard. Spot checks of hardness are made by file and by Rockwell.

Hundreds of manufacturers have had similar experiences following adoption of the Homocarb method for heat treating. The method provides fast, safe, uniform heat treatment at low cost. It is a completely integrated system, with all components, from furnace to the recording controller designed to work together efficiently. Homocarb equipment is available in a size best suited to your needs. For further information, write Leeds & Northrup Co., 4956 Stenton Avenue, Philadelphia 44, Pennsylvania.



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- **Faster production** . . . furnace fits into production lines without affecting use of adjacent equipment. In addition, furnace can be reloaded with practically no waiting between batches.
- **Minimum floor space** because Homocarb furnaces take big loads.
- **Safe operation.** No salts or compounds. Gas cyaniding medium feeds through pipes and when spent, burns at vent in lid. No special ventilation needed because the Homocarb method discharges no objectionable fumes.

THE IRON AGE

November

CMP on Steel Coming by June

Consumers Get Trimmed Again

Warehouse Share Smaller Too

The Iron Age

SUMMARY

IRON AND STEEL INDUSTRY TRENDS

PIECEMEAL control of steel distribution will be junked in favor of a modified controlled materials plan by the end of next May. As expected, the part-control part-free method of distributing steel is already proving unworkable. The system will eventually break down from the weight and multiplicity of its own orders and revisions.

Meanwhile, new orders and revisions may be expected to continue multiplying. By the middle of next year, or sooner, the control orders will be so numerous and far reaching that a controlled materials plan will be installed as a means of restoring order to a confused and chaotic market. By that time controls will be so widespread that the changeover will bring little shock, will even be welcomed by some as a simplification.

Hardest hit will be manufacturers of non-essential civilian goods. Steel shipments to them will be drastically slashed, if not eliminated. During the last war steel was shipped only for war or essential civilian use.

Little Steel for Non-essential Goods

For example, during 1943 total direct war uses received 38 pct of steel output and other essential uses received 62 pct. These total 100 pct of production. Steel requirements were simply matched against steel production. Under this plan there is a seat for every ticket-holder.

This doesn't mean that no peacetime goods will be produced. Far from it. It does mean that peacetime production will get only what is left after defense and essential requirements have been matched against steel production. And steel-hungry manufacturers will not be permitted to turn the market into a free-for-all with no holds barred.

Some non-defense consumers will likely get the bad news this week on what they can expect in the first part of next year. Producers are adding up the score of DO and government program requirements for the first quarter.

What is left will be distributed as fairly as possible among civilian consumers. But carry-overs of some mills are going to be tremendous.

Despite their strong efforts to clean up old orders and start the new year fresh, they are running as much as 2 months behind on some items. They are planning to wipe out the carry-overs and start the new year with a clean slate. Customers will still be on the books for the month or two lost. It may mean little.

Shortages Catching Up

Auto producers, with the exception of Ford, are continuing their dizzy production race, although they expect to be pulled down from behind by material restrictions. Limitations on the use of aluminum (for pistons) and copper (for radiators) and wiring will be felt keenly.

NPA's order assuring warehouses proportionate percentages of steel products based on average shipments during the first 9 months is good news to many small manufacturers. But not as good as it sounds. Warehouses received about 20 pct of all steel shipped during the first 9 months, but the hitch is that they will get their 20 pct after defense and essential priorities have been met. Thus their share will actually be much less than 20 pct of total steel shipments.

Hardest Hit on Flat-Rolled

They will be especially hard hit on vital flat-rolled products. By June defense and essential civilian priorities will be taking about 50 pct of flat-rolled output. Warehouses will receive their proportionate share of the remaining 50 pct. Since they have been receiving about 11 pct of flat-rolled shipments, by June they will be getting only about 6 pct of total flat-rolled output (plus replacement of their stock going to DO orders). Of course they will get a bigger share of some other products.

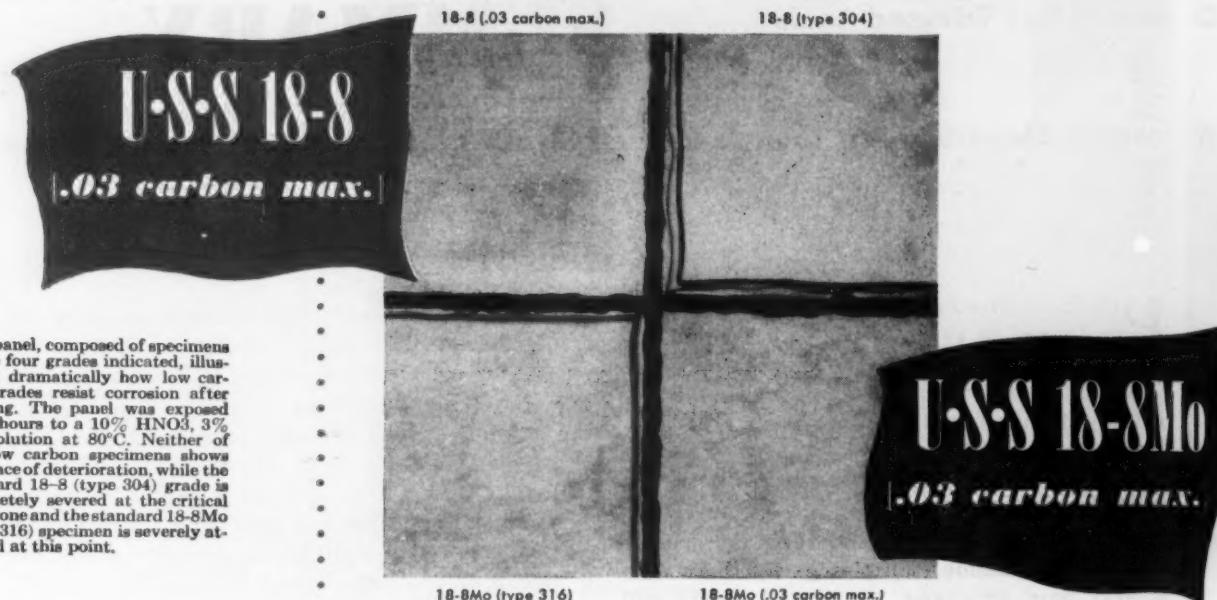
Steelmaking operations this week are scheduled to remain at 103 pct of rated capacity.

(Nonferrous summary, p. 130)

Two new extra-low carbon

U·S·S Stainless Steels

give high corrosion resistance after welding



This panel, composed of specimens of the four grades indicated, illustrates dramatically how low carbon grades resist corrosion after welding. The panel was exposed for 6 hours to a 10% HNO₃, 3% HF solution at 80°C. Neither of the low carbon specimens shows evidence of deterioration, while the standard 18-8 (type 304) grade is completely severed at the critical weld zone and the standard 18-8Mo (type 316) specimen is severely attacked at this point.

Where to use these low-cost, low-carbon Stainless grades

Welded tubing
Smoke stacks and duct-work in chemical plants
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If you need a grade of Stainless Steel that must undergo exposure to exceptionally severe corrosive conditions after welding or hot forming, you'll find real savings in these two new grades of U·S·S Stainless Steel which contain a maximum of 0.03% carbon.

During exposure to sensitizing temperatures—800° to 1600°F.—some of the chromium in ordinary grades of Stainless combines with carbon to form chromium carbides, thus reducing corrosion resistance. Heretofore, fabricators have had to combat this by annealing the product or by the use of steel containing such stabilizing elements as columbium or titanium—both expensive operations.

Development of two new U·S·S Stainless Steels—U·S·S 18-8 [.03 carbon max.] and U·S·S 18-8 Mo [.03 carbon max.]—now makes the inconvenience of special treatment or the extra cost of stabilized grades in many

applications unnecessary. In these new grades, the carbon content has been drastically reduced, practically eliminating the problem of carbide precipitation with resultant intergranular corrosion.

Corrosion tests of welded joints have indicated that these new grades give resistance to intergranular corrosion adjacent to welds equal to the more expensive stabilized grades and far in excess of ordinary grades.

By replacing stabilized grades with low carbon grades, you can realize savings in material costs up to 10%. In many cases, stress-relieving of welded vessels can be accomplished at substantially lower temperatures.

Get all the facts on these two new U·S·S Stainless Steels by writing for a copy of our booklet. Send your request to United States Steel Corporation Subsidiaries, 2205 Carnegie Building, Pittsburgh 30, Pa.

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ONE ROLL WITH A DOUBLE ROLE! This three-roll heavy duty padder made by the Morrison Machine Company with the dual metal rolls top and bottom and rubber-covered iron roll in the middle is used by the textile industry to impregnate and squeeze many fabrics.

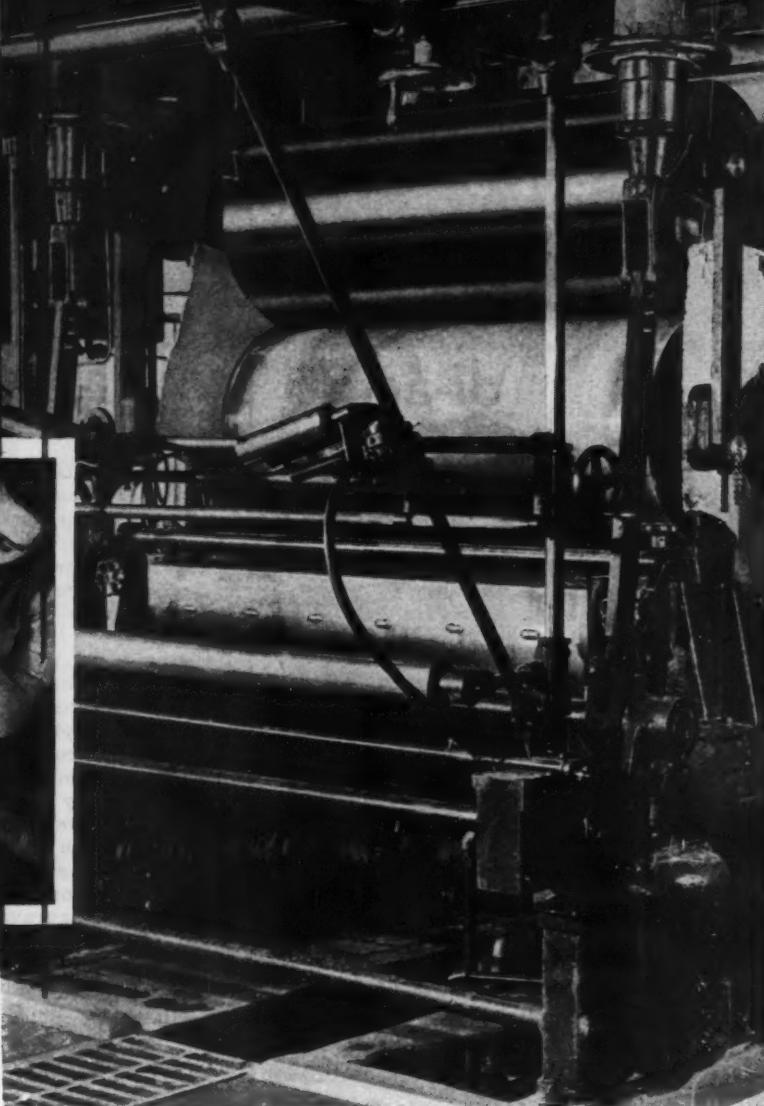
Take, for example, the casting of the rolls we make for the Morrison Machine Company of Paterson, New Jersey, one of America's leading designers and builders of textile machinery.

Two metallurgical characteristics are needed—an outer shell that resists corrosion from bleaches, finishes and dyes, *plus* an inner core that makes for economy and ease in fabricating.

No *one* metal can do both economically. So utilizing centrifugal force and temperature, the two dissimilar metals are poured successively in horizontally spinning metal molds. The casting thus has an outer shell of stainless steel metallurgically bonded to an inner core of gray iron.

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Alloy Steel—all grades.

Carbon Steel—all grades.

Gray and Alloy Iron—all standard and special analyses, including Ni-Hard and Ni-Resist.

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Letters from Readers

Economist's Comments

Sir:

Remarks in the news article, "Savings Bonds—Roadblock to Inflation," by W. V. Packard, published in the Oct. 29 issue of THE IRON AGE, were interesting. For the most part, the basic tenets discussed in the introduction were sound and well worth reading.

However, we would be inclined to disagree with the second of the four suggested means for taking money away from people. Wage and price controls will accomplish little in eliminating excess buying power. If the increased supply of money as a result of greater Government spending is not paid out in wages, some other faction in the economy will receive those funds. Furthermore, price controls merely aggravate the unbalanced demand-supply situation. We have discussed this problem from time to time in our bulletins.

J. J. CARTER
Assistant, Research Div.
American Institute For Economic Research
Great Barrington, Mass.

Additional Info

Sir:

In the June 22 issue "Dear Editor" column, the question regarding cast steel grinding balls was answered only partially by the editor. Considerable commercial tonnages of cast steel balls are also being produced in sand molds in the U. S. and Canada. This type of cast steel ball, whether from sand or metal molds, is quenched while some of the interior of the ball is molten or mushy so as to cushion stresses from a mild or drastic quench.

The claims that the chilled Nihard ball from metal molds withstands 20 to 40 pct greater wear resistance than the sand cast type do not obtain for the cast steel type. The evidence, as to wear resistance in pilot and large scale tests, is in favor of the sand cast ball.

A. C. MUNRO
Gen'l Supt. of Mills
Britannia Mining & Smelting Co., Ltd.
Britannia Beach, B. C.

Credit Where Due

Sir:

The headings to the interesting article entitled "Scrap Handling—Key to Faster Melting," by E. L. Diamond in your Sept. 21 issue have caused

this association some embarrassment, and it would be very much appreciated if you could publish a correction.

The British Iron & Steel Institute is credited with the work that you reported, whereas it was in fact carried out by this association, on the staff of which Mr. Diamond then held a distinguished place. He has since gone to the British Standards Institution in quite another capacity, so that neither the Iron & Steel Institute nor the British Standards Institution were in any way concerned with this work.

MAX DAVIES
Public Relations Officer
British Iron & Steel Research Assn.
London, England

Our apologies for inadvertently giving the British Iron & Steel Institute credit for work done while the author was associated with the British Iron & Steel Research Assn.—Ed.

Forging Stainless

Sir:

We have received and greatly appreciate the complimentary tear sheets on "Forging Stainless Steel." We have read the article with interest, and are forwarding it to our associates in England who, we are confident, will find it most useful reading material.

E. V. ENEVIK
First Vice President
Uddeholm Co. of America, Inc.
New York

Wants Ferro-Alloys Book

Sir:

I would appreciate it if you would advise me whether there exists a book about ferro-alloys, by whom it is edited, and where I could buy a copy.

A. HAMMER
Aug. Hammer, Wien
Vienna, Austria

So far as we know, there is no reference book published in the U. S. devoted exclusively to ferro-alloys. A booklet entitled "Ferroalloys and Metals" is published by Electro-Metallurgical Sales Co., 30 East 42nd St., New York. This firm is a large producer and seller of ferro-alloys. Steel Products Manual No. 1, entitled "Pig Iron and Blast Furnace Ferroalloys," published by the American Iron & Steel Institute, 350 Fifth Ave., New York 1, gives data on commercial practices.—Ed.

Who Makes It Dept.

Sir:

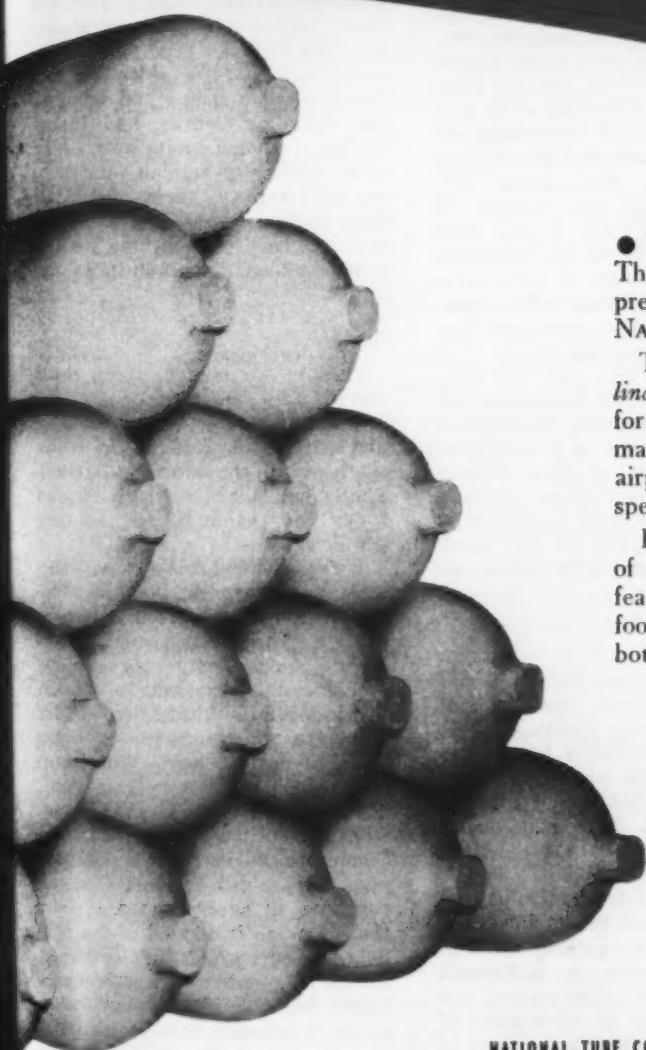
On p. 94 of your Oct. 5 issue there is an article on the use of portable sectional racks, and also the use of an industrial crane truck with telescoping boom in conjunction with the racks. We would appreciate it if you could give us the name of the company manufacturing the telescoping boom crane truck.

H. L. OLSON
Master Mechanic
Wilson & Co.
Chicago

The crane truck mentioned in the article "Steel Warehouse Cuts Costs With Portable Sectional Racks," is made by the Baker-Raulang Co., Baker Industrial Truck Div., 1250 W. 80th St., Cleveland 2.—Ed.

Extreme Pressures

AVAILABLE IN A WIDE RANGE OF
SIZES FOR ANY TYPE OF SERVICE



● Take a good look at the pictures on these two pages. They show just a few examples of the wide range of high pressure containers and hollow forgings that are made by NATIONAL Tube Company.

The complete list is a lengthy one, and includes *cylinders* for transportation and storage of gases—*bottles* for liquid and gas storage—*accumulators* for hydraulic machinery and pumping stations—*hollow forgings* for airplane jatos, dry ice containers, trailer axles, and other special-purpose containers.

But there's more to our story than a complete range of sizes and types. Consider the two most important features of high-pressure containers—high strength, and foolproof safety. NATIONAL Tube Company gives you both, because of controlled-quality steels, perfected methods of manufacture, and our rigid inspection policy.

Whatever your needs, you can be sure of the highest possible quality when you buy from National Tube Company — world's largest and most experienced manufacturer of tubular products. Write for more information *today*. National Tube Company, Frick Building, Pittsburgh 19, Pennsylvania.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

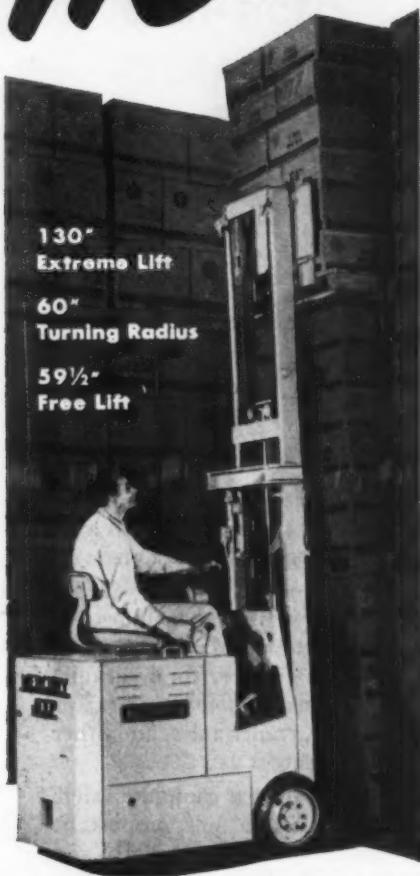


NATIONAL SEAMLESS HIGH-PRESSURE CONTAINERS

UNITED STATES STEEL

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Mercury JEEP

MODEL 230
2000 LB. CAPACITY

Completely new and the most versatile fork truck of 2000 lb. rating. 130" extreme lift to permit full utilization of storage area... short 60" turning radius for greater maneuvering in narrow aisles and congested areas... ample "free lift" and many other improvements, that mean maximum operating efficiency at lower cost. Completely described in Bulletin 295. Request your free copy.

MERCURY MANUFACTURING COMPANY
4144 S. Halsted St. • Chicago 9, Illinois



Fatigue Cracks

By CHARLES T. POST

Bomb Shelter?

Your favorite family journal's relation to military production never has been questioned, but since talking to Bernie Herman, regional business manager at Philadelphia, we can see a glowing opportunity in civilian defense, too.

Bernie passes along a testimonial from Franklin Price, of the Free Library of Philadelphia, as to how your f.f.j. possibly saved that repository of knowledge from total destruction by fire. Seems the library, shifting the location of several year's back issues, had them stacked up in the doorway of one of its rooms. A subversive reader tossed a match in literature of an inflammatory type, starting a fire that gutted the room. The stacks of your f.f.j. not only prevented the fire from spreading, but were scarcely charred, themselves.

That should win us a certificate from the Board of Fire Underwriters, and from there its only a short step to gain approval as a structural material for bomb shelters. In war, as in peace, we serve the nation.

Double Cross

Milton O. Cross, Jr., president, and Ralph E. Cross, vice-president and secretary, take justifiable pride in the help employees have given them in building up the business of Detroit's Cross Co. in the machine tool field. The business has grown so, in fact, that they are taking over a new plant. Not so long ago the lads on the payroll lured the Crosses into a nice kind of booby trap by getting them to bring their wives to a Detroit restaurant, where they walked into a surprise party in celebration of the new plant. That's the kind of spirit that counts when the pressure is on for extra production effort.

Metal Forever

The first critical report we've heard on the National Metal Show comes from David Verson, president of Chicago's Verson Allsteel

Press Co. After touring the acres of exhibits, Mr. Verson chose your f.f.j.'s booth in which to rest his weary feet. Nearly all of the other exhibitors, Mr. Verson explained, were playing traitor to the metalworking industry which nurtures them, by using wooden or plastic furniture. Your f.f.j. showed its usual *savoir faire* with chrome plated tubular chairs and lounges. The seats, of course, had inner-spring cushions, but next year we're making a note to toss these out and replace them with steel floor plate. Seems like a logical way to leave our whole-hearted metalworking imprint on those who tarry.

Puzzlers

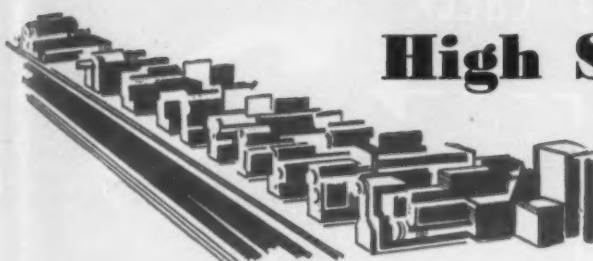
Back in our student days, there was an ugly rumor that one of the instructors used to grade examination papers by tossing the stack of them up the stairs, assigning grades according to which step on which they came to rest as they slid down.

We've modified this system somewhat in determining correct answers for the puzzlers that appear in this space. Exactly how is a secret, but majority rule is a big element. It works well in politics, so why not in mathematics? Every once in a while someone questions the published answer. This morning we have a letter from A. E. Denis, Chief of the Iron and Steel Division, Ministry of Industry and Commerce, Paris, France, who supplies algebraic and geometrical calculations in support of his belief that 16.47318 ft instead of the published answer of 17.45 ft is correct for the diagonal board problem published Sept. 28. This means we're going to actually have to get down and dig, since M. Denis' answer conflicts with that submitted by the best brains of American industry, who, after all, really need French steel these days.

Last week's answer: 43 sets of automobile tires and 18 sets of motorcycle tires. Hope this doesn't start any international differences of opinion.

MACHINE TOOL

High Spots



*Sales
Inquiries
and Production*



By W. A. LLOYD

Rating Clarification — Some clarification of the situation with respect to ratings for purchase of machine tools was reported this week by National Machine Tool Builders Assn., Cleveland.

There are four DO ratings that may properly appear on an order for a machine tool.

DO-03 is applied by the Army or Navy when a machine tool is to go into a new ship. That rating is assigned to a prime contractor and to a prime contract. However, if in the manufacture of the machine under that prime contract the prime contractor has to buy a machine tool, he must get specific permission and he will then apply DO-21 to his purchase order.

Army, Navy Use — DO-04 may be used by the Army, Navy or the Air Forces for machine tools to be physically incorporated into new mobile shops.

If the machine tool builder who gets a prime contract for such a machine under DO-04 has to buy a machine tool and gets specific permission from the contracting

officer to do so, he will then apply a DO-21.

DO-21 may be used by a department of the government for facilities to be owned by the government, or for material to go into stock and to be issued from stock. It may be used by the Army, Navy or Air Forces. It is to be used for machine tools to be installed in existing mobile shops or existing shops as distinguished from new ones. It may be used for advance base equipment or machine tools shipped to foreign theaters of war.

Use by Contractors — It may be used by the contractor or subcontractor where the title of the machine is to rest in the government, on the specific authority of a contracting officer.

Where a contractor or subcontractor gets permission from a contracting officer to use a priority to purchase a machine tool intended not for one contract, but for production facilities, and where the title is to rest in the contractor or subcontractor, he will use DO-98.

All DO ratings have exactly the same value when it comes to scheduling machine tools in the shop.

Same Rules — There is much confusion about orders a machine tool builder may receive for maintenance, repair or operating supplies but, broadly speaking, the rules are the same. DO-21 may be authorized on such orders if for the direct procurement of the government and to become the property of the government. DO-98 should be used if it is being bought by a contractor or subcontractor engaged in essential work.

The machine tool builder may extend any of the ratings listed

above for the purchase of production materials, that is, steel, copper, brass or any other materials that actually go into the product to be built for the defense program. And these ratings may be re-extended by anyone who gets them again for production materials.

May Combine Orders — Under Par. 11.9-D of NPA Reg. 2, a machine tool builder who has a number of rated orders for which he cannot place orders for minimum commercially procurable quantities of materials to fill the rated orders individually may list all rated orders to which the material will apply and place on a rated order for the full quantity required, using the symbol DO-99. Amounts ordered may not be more than the total material required for rated orders combined.

MAP Moves Along — In Washington, the Military Allocations Program is moving along. Indications are Norway will get \$5 to \$10 million in machine tools. A \$2½ million program has been approved and a \$5 million program is under consideration.

France's requirements are indefinite. Estimates are this program runs from \$30 to \$50 million, but a number of important details remain to be worked out.

Holland has a fair-sized program. Tentative plans call for \$5 to \$10 million in machine tools for a truck and ammunition program.

Italy to Benefit — Italy, which has benefited tremendously under ECA and the Export-Import Bank, may eventually play an important part in MAP because of its plant capacity. Tentative plans indicate Italy will get additional machine tools under MAP. The British program, which started late, has been completed first.

New Capacity Required — This business, plus present backlog, constitutes a demand for production greater than the industry's present capacity. New plant capacity will probably be required. A general effort is being made to double America's 1950 production next year.



GEAR SHAPERS
SHAVING MACHINES
THREAD GENERATORS
CUTTERS AND SHAVING TOOLS
GEAR INSPECTION INSTRUMENTS
PLASTICS MOLDING MACHINE

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Now—One grease will service all grease applications in the majority of plants

SHELL ALVANIA GREASE



Gives ALL THESE PLANT SAVINGS:

1. Extends **TIME** between **greasings**—lasts longer . . . stays in bearings longer.
2. **Low-cost application**—fewer servicings and *only* the one grease to handle.
3. **Simple inventory**—Shell Alvania Grease replaces up to 20 brands formerly required.
4. **Better protection**—against heat, cold and moisture.
5. **Greater safety**—less chance of applying the wrong grease!

Gives ALL THESE LUBRICATION ADVANTAGES:

1. **Higher mechanical stability** than any conventional grease at operating temperatures.
2. **Pumpable at low temperatures**—even in unheated storage.
3. **Stable at high temperatures**—superior to the best "soda" greases.
4. **Impervious to water**—excellent resistance to washing out.
5. **Longer service life**—reduced consumption.

The "MILLION-STROKE" Industrial Grease

A grease that will stand 100,000 punishing strokes of the ASTM Work Tester has been considered a superior lubricant.

In a deliberate attempt to break down Shell

Alvania Grease, on the same tester the run was extended...200,000 strokes...300,000 strokes . . . 500,000 strokes! Finally, at one million strokes the test was discontinued, because this grease *would not break down*—it was still a fit lubricant both in appearance and consistency.

SHELL OIL COMPANY

50 West 50 Street, New York 20, N. Y. • 100 Bush Street, San Francisco 6, California



SHELL ALVANIA... The "MILLION STROKE" Grease

FREE

USE POST CARD

PUBLICATIONS

For Quality Heat Treat

One of the newest tools available to the production heat treater, the rotary retort controlled atmosphere furnace, is described in a new 4-p. bulletin. These production line heat treating furnaces are presented in detail, with diagrams illustrating typical production operation. One of the significant features shown is the fact that they permit fully automatic operation of the work feeding and processing system, in fields of gas case carburizing, homogeneous carburizing, dry cyaniding and clean hardening. *Surface Combustion Corp.*

For free copy insert No. 1 on postcard.

Shows Motor Lubrication

Studies in bearing lubrication for electrical motors are presented in a new 4-p. bulletin. The folder graphically shows comparative amounts of lubricant in different designs of bearings and how bearings are subject to air circulation. Application of U. S. Motors' Lubri-flush principle is presented, showing how bearings can be lubricated for life and also can be purged of old lubricant and renewed without disturbing the bearing housing. *U. S. Electrical Motors, Inc.*

For free copy insert No. 2 on postcard.

Collet Bulletin

An up-to-date listing of popular style collets for all makes of lathes and millers is included in a new 4-p. order bulletin. The folder presents the latest design collets for new machines and shows major dimensions; maximum capacity for round, square, and hexagon; collet adaptation for nose type chucks; stocking locations where collets

New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.

may be ordered; prices, and helpful ordering information. *Hardinge Brothers, Inc.*

For free copy insert No. 3 on postcard.

Longer Electrode Life

In addition to listings of standard diameters and lengths in which Fansteel tungsten electrodes are supplied, a new 4-p. bulletin contains seven practical suggestions for longer electrode life, better welds, labor saving and lower welding costs. Application of these electrodes in helium, argon, and atomic hydrogen arc welding is described, and illustrations show correct use. *Fansteel Metallurgical Corp.*

For free copy insert No. 4 on postcard.

Aluminum Handbook

Basic information on how to design load-carrying structures in aluminum is presented in up-to-date form in the 130-p., 1950 edition of "Aluminum Structural Design." This handbook enables engineers to design an original structure of aluminum, or to convert an existing structural design from some other material to aluminum. The discussion covers figuring tensile, compressive, bending and shear stresses, as well as stresses in cylinders subjected to fluid pressure. Formulas and actual examples contribute to usefulness of the book. A section is devoted to fabricating considerations and

joining methods; additional chapters cover deflection and vibration problems. Tabular matter includes 66 p. of information on physical, chemical, and mechanical properties; a list of sizes, alloys, and tempers of available aluminum mill products; shear, moment, and deflection formulas for beams; and other engineering data. *Reynolds Metals Co.* Sent without charge to designers, engineers, architects and other company officials. Address inquiries on company letterhead to this column.

Powder-Cutting Described

A new 8-p. illustrated booklet, "Powder-Cutting and Scarfing Processes," describes applications of these processes in the fabrication of stainless steel. Other uses discussed are the powder-cutting of heavy steel scrap and nonferrous applications. The chemistry, metallurgy, and equipment used in the process are described in detail. *Linde Air Products Co.*

For free copy insert No. 5 on postcard.

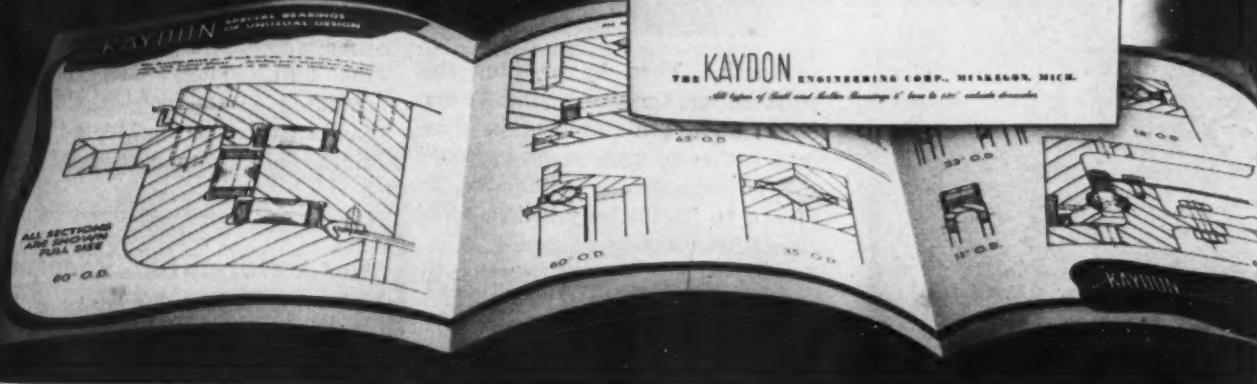
Improved Filters

Complete information on improved Belke filters, which have a new slurry tank design as well as recently developed lucite filter plates, is presented in a new 4-p. folder. Data on filters for acid solutions and filters for cyanide solutions is included. Both hori-

Turn to Page 114

**THIS KAYDON BULLETIN
CONTAINS DATA ON
DEEP-FLAME-HARDENING
AS PIONEERED BY KAYDON**

Write for this Bulletin now!



The KAYDON technique of deep-flame-hardening for bearings of unusual shapes, sizes and thin sections

Designers and users of special machinery will appreciate this information on KAYDON-pioneered deep-flame-hardening which has helped remove bearing-limitations that heretofore proved to be serious handicaps.

This new KAYDON technique in deep-flame-hardening hardens only the raceways of the bearings. This permits the races themselves to be accurately drilled, tapped and gear-cut . . . eliminates many of the surrounding parts which normally

would be necessary . . . results in important weight-reduction . . . makes possible the creation of unusual designs that accommodate minimum sizes of bearings in the space available . . . permits unusual shapes, very large diameters, and extremely thin sections, all of which greatly facilitate mounting.

Write for this Bulletin on KAYDON Deep-Flame-Hardening . . . and when you need the unique services offered, contact KAYDON of Muskegon.

KAYDON Types of Standard or Special Bearings: Spherical Roller • Taper Roller • Ball Radial • Ball Thrust • Roller Radial • Roller Thrust

**THE KAYDON
ENGINEERING CORP., MUSKEGON, MICH.**

ALL TYPES OF BALL AND ROLLER BEARINGS 4" BORE TO 120" OUTSIDE DIAMETER •

NEW

PRODUCTION IDEAS

Continued

carbon or special alloy steel. Dies are used on B&S automatic, Swiss type and for hand operation. *Woodruff & Stokes Co.*

For more data insert No. 21 on postcard, p. 35.

Tube Bending Press

Hydraulic press has operating speed of 20 strokes per min.

On a new tube bending press, a multiple positive index stop for various degree bends eliminates unpredictable over-runs. The knee width of the press is 11 in., which permits reverse bends 5½ in. apart. Rocker die and three sets of rockers and side arms are furnished with hydraulic pressure pad. An



overhanging type ram operates in nickel cast iron gibs and permits bending over the top of the punch. With this construction, all operational strains are taken off the cylinder packings and rings. *Gibbons Machine Co.*

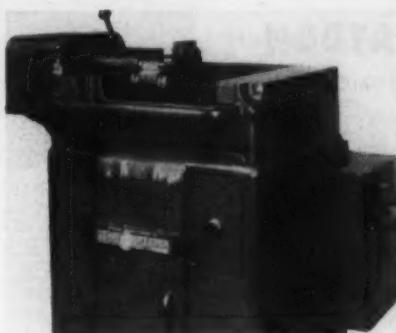
For more data insert No. 22 on postcard, p. 35.

Rapid-Action Gear Tester

Tests pinions for nicks by running them in mesh with master gear.

The rapid rate at which pinions can be tested is the result of design features of a new gear tester. A power spindle, on which is mounted the master gear, drives the work pinion which is slipped onto its spindle in the rocking workhead without need for a retaining work fastener. The workhead rocks about a central fulcrum with a compression spring normally holding it at an elevation which allows the

pinion and master gear to be in loose mesh so that the work pinion may be slipped on and off readily. The rocking handle is pulled forward to bring the two gears in close mesh, or to a predetermined center distance and, at the same time, to release a safety electrical



interlock. Then by pressing the start button, the test begins. Power is cut off and a clutch brake goes into action to stop rotation when the rocking handle is allowed to return to its initial position. *National Broach & Machine Co.*

For more data insert No. 23 on postcard, p. 35.

Pneumatic Hammer

Operates when pressed into contact with work, stops when withdrawn.

The Appton Super hammer measures 9½ in. overall, and has a 1-in. diam piston. Its no-trigger construction combined with 5-lb weight make for safe, easy handling. Recoil has been eliminated. The Appton also features force of blow control, adjustable from a light tap for delicate work, to full power for heavy applications. It operates on pressures from 30 to 100 lb. *Burgess Thomas Co.*

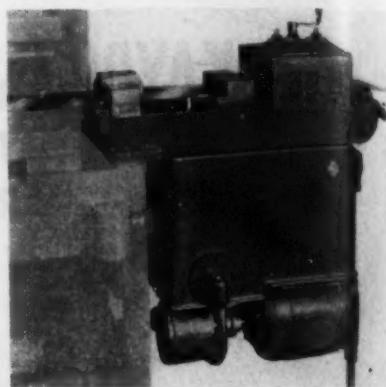
For more data insert No. 24 on postcard, p. 35.



Stock Feed

Handles stock up to 8 in. wide; feeds desired lengths to 24 in.

A new Haller gripper type stock feed for use on punch presses is hydraulically-operated. Accuracy of



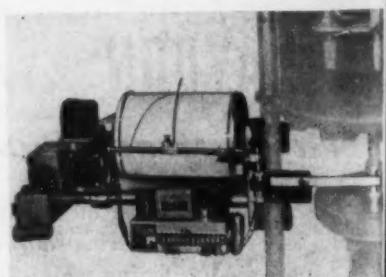
feed is guaranteed within 0.003 to 0.005 in. on each stroke. The unit is actuated from the press ram and has sufficient power to pull the stock through a roll-type straightener which is an integral part of the unit. The Model 8FTS is mounted on the bolster plate and can be located to feed from the left, right, front or back. *Special Engineering Service, Inc.*

For more data insert No. 25 on postcard, p. 35.

Hot Deformation Recorder

Helps to reduce scrap losses; measures hot sand expansion.

To aid in lessening casting surface defects caused by breaks in



the mold face, a new foundry accessory is available that measures sand's ability to deform while hot. The unit is offered for use with any model of Dilatometer. *Harry W. Dietert Co.*

For more data insert No. 26 on postcard, p. 35.

Ten-Ton Trailer

For transporting coiled strip steel.

Designed for carrying two coils of strip 48 in. in diam, this tractor drawn trailer is arranged so the

Turn to Page 118

THE IRON AGE

BLENDED
Novem

Follow the lead of these Business Leaders...

they're all giving Schenley to wish friends the best!



Harry G. Griffiths, President of the Pennsylvania Drug Co., says: "I order Schenley by the case—and my gift buying is through! It's quick and easy! There's no finer whiskey-gift."



Col. William Schiff, President of Schiff Terhune & Co., Inc., Insurance Brokers, says: "I give Schenley because it's a really fine whiskey . . . and a really fine answer to my Christmas problems!"



Arthur Martin Karl, President of Names Unlimited, Inc., Direct Mail Consultants, says: "Schenley is the answer to all my gift problems. I enjoy Schenley in my home, too."



Herbert Sondheim, President of Herbert Sondheim, Inc., Famous Dress Manufacturers, says: "Everyone appreciated Schenley last year, so I'm giving it again this Christmas."



Richard E. Booth, Executive of Nowland & Schladermundt, Industrial Designers, says: "A gift of Schenley is the best way I know to say, 'Thanks for all you've done for me this past year!'"



Edward Lyman Bill, President of Bill Bros. Publishing Co., Publishers of Sales Management, says: "Schenley is an ideal gift. Every man welcomes a gift of fine whiskey."

It's "GOOD BUSINESS" to give
SCHENLEY

BLENDED WHISKEY 86 PROOF. 65% GRAIN NEUTRAL SPIRITS. SCHENLEY DISTRIBUTORS, INC., N. Y. C.

November 16, 1950



Iron Age

Introduces



B. C. BLAKE, appointed vice-president and general manager of Conitors Steel Co., Div. of H. K. Porter Co., Inc., Birmingham.



FRED C. FOY, appointed vice-president and general manager, Tar Products Div., for Koppers Co., Inc., Pittsburgh, effective Dec. 1.



THOMAS R. HUGHES, named vice-president and sales manager for Utica Drop Forge & Tool Corp., Utica, N. Y.

Charles R. Holzworth, formerly vice-president and general manager, Tonawanda Iron Div., of the AMERICAN-STANDARD CORP., Pittsburgh, named president. Mr. Holzworth succeeds B. S. Stephenson, who recently retired.

Robert Gordon McAllen, appointed assistant to the president of HORIZONS INC., Princeton, N. J. **Dr. J. L. Snoek**, named head of the Physics Dept.

William A. Marsteller has resigned as vice-president of ROCKWELL MFG. CO., Pittsburgh, and as vice-president and director of EDWARD VALVES, INC., East Chicago, Ind., to establish the Marsteller Co., consultants in marketing and advertising.

Dr. H. K. Ihrig, elected vice-president in charge of research for ALLIS-CHALMERS MFG. CO., Milwaukee.

G. L. Rathel, vice-president in charge of purchases for CONTINENTAL STEEL CORP., Kokomo, Ind., is retiring at the end of this year after 37 years with the firm. Mr. Rathel will be succeeded by **F. R. Davis**. **D. J. Pickett** will assist him.

Charles Pack, formerly vice-president in charge of production, named vice-president in charge of the Engineering & Research Dept., for the DOEHLER-JARVIS CORP., New York. **W. G. Gutmueller**, made vice-president and production manager; **Louis Miller**, assistant vice-president; **Harold L. Samuels**, secretary, and **H. C. Mandeville**, assistant secretary.

Richard T. Stafford, assistant to the executive vice-president, General Machinery Div. of ALLIS-CHALMERS MFG. CO., Milwaukee, has retired after nearly 47 years with the firm.

Arthur W. Carlquist, appointed general sales staff manager for GERRARD STEEL STRAPPING CO., Chicago, and **Harry M. Reed**, named Chicago Div. manager.

C. I. Bradford, named director of operations for REM-CRUTITANIUM, INC., Bridgeport, Conn. **Edward L. Wemple**, appointed production manager and **Dr. Walter L. Finlay**, made research manager.

O. P. Robinson, named manager, Pittsburgh district, for CUTLER-HAMMER, INC., Milwaukee.

J. N. Candler, appointed vice-president and assistant general manager of BORG-WARNER CORP., Chicago. **R. J. Howlison**, formerly general sales manager, named vice-president in charge of sales; **E. W. Deck**, vice-president in charge of manufacturing, Ithaca plant; **M. V. Durkin**, vice-president in charge of manufacturing, Detroit plant; **W. M. Reynolds**, secretary and treasurer, and **E. G. Wuensch**, assistant treasurer.

J. N. Forker, vice-president and general manager, Tar Products Div., of KOPPERS CO., INC., Pittsburgh, will retire Dec. 1. **Cooke Bausman, Jr.**, appointed acting sales manager.

Victor E. Schlossberg, appointed chief engineer, Indiana Harbor Works, for INLAND STEEL CO., Chicago. **Ryland J. Beeswy**, named superintendent, Electrical Dept., and **Noah R. Kirkdoffer**, superintendent, Power and Steam Depts.

Ronald C. Hinman, named sales engineer for WESTERN GEAR WORKS, Seattle.

Russell W. McGuire, appointed industrial sales manager for TRION INC., McKees Rocks, Pa.

John S. Coey, appointed eastern sales manager of the HOOKER ELECTROCHEMICAL CO., Niagara Falls, N. Y. Thomas H. Trimble, formerly eastern sales supervisor, named assistant manager.

William E. McCoy, named assistant sales manager, Central Div. of CATERPILLAR TRACTOR CO., Peoria, Ill.

J. T. Farrell, named assistant to the manager of sales, Small & Medium Motor Div., for GENERAL ELECTRIC CO., Schenectady. Howard W. Bennett, made manager, Gear-Motor & Packaged Drive Sales Div., and Paul D. Ross, named manager, D-C Armored Motor Sales Div., Erie, Pa. Austen W. Boyd, to take charge of chemical process development, Waterford, N. Y.

P. D. Donahue, appointed traveling freight agent at Buffalo for the WABASH RAILROAD CO., St. Louis.

J. Sharp Queener, appointed manager, Safety & Fire Protection Div., for E. I. du PONT de NEMOURS & CO., INC., Wilmington, Del.

Douglas Thatcher, named sales manager, ceramic-electronic products, for GLOBE-UNION, INC., Milwaukee. Wickham Harter, named sales manager, mechanical-electronic products; Robert A. Mueller, distributor sales manager, and Paul Lamboley, export manager.

Roy Mills, named director of purchases for GENERAL FIREPROOFING CO., Youngstown.

E. C. Barlow has joined CHARLES J. HAAS, INC., Philadelphia.



RAYMOND SZYMANOWITZ, elected a director of Acheson Colloids Ltd., London, England.

Iron Age Salutes

HERMAN W. STEINKRAUS

HERMAN W. STEINKRAUS has hewed out a high niche in industry. In his earlier life he might have been lured away to other sound careers—to the pulpit, the army, or the concert stage. But industry was in his heart and he put his life into it, becoming chairman of the board and president of the Bridgeport Brass Co. This month he will pin on the diamond-studded pin of the company's Quarter Century Club.

Born in Cleveland, he built up his own business and in the 20's Bridgeport Brass bought out his warehouse so that he could come to Bridgeport as general sales manager. They hitched their wagon to a star for under his leadership, the firm has grown from one selling chiefly to the eastern area to a national organization with major plants in four cities and branches in 25 areas.

His family was pious and following the example of two brothers majoring for the ministry he thought seriously of becoming a clergyman. Then came World War I and Mr. Steinkraus wasted no time getting in. He started as a private but they pinned captain's bars on his shoulders and the Distinguished Service Cross on his chest before he was through.

After the war he decided that he would fit into the world of industry. It was a challenge. The local schools of Cleveland gave him his early education and he entered Western Reserve University to graduate magna cum laude.

Mr. Steinkraus has another talent common to his family—a fondness and inclination to music. His family had such fine voices that frequently they were booked to



gather for concerts. But he has no regrets that he left music. His children have taken up the torch. Ruth majored in music at Vassar and is working to become a concert pianist. A Yale graduate, William plays the viola and is a member of the Connecticut Symphony Orchestra. Marjorie, a Stevens College graduate, sings for a hobby.

Although Mr. Steinkraus has achieved great success in the sales and managerial field, he is probably more widely known for his work in the field of labor and management relations. When he was president of the Chamber of Commerce of the United States he wrote: "Labor relations are just human relations, and humans are human because they have a strange habit: if you treat them as equals, respect their integrity, give them the facts, they'll be entirely reasonable. Any company not working out a good program of better information, employee and community, is neglecting one of the greatest forces towards industrial harmony."



H. GOTTWALD, named assistant vice-president, Meter & Valve Div., for Rockwell Mfg. Co., Pittsburgh.



RICHARD SCHWARZCHILD, appointed assistant to the president of American Silver Co., Inc., Flushing, N.Y.



GEORGE J. MEYERS, JR., named executive vice-president of Reading Tube Corp., New York.

Hulbert C. Tittle, formerly engineering service manager, appointed assistant chief engineer, Radio and Television Div., for SYLVANIA ELECTRIC PRODUCTS, INC., Buffalo.

M. B. Garber, named director of sales for the THEW SHOVEL CO., Lorain, Ohio. **J. T. Cushing**, appointed sales manager, and **Q. J. Winsor**, named manager of development sales.

Gordon Porterfield, named sales representative, New York office, for BALDWIN LOCOMOTIVE WORKS, Philadelphia.

William F. Pioch, appointed manager of manufacturing engineering, Aircraft Engine Div., for the FORD MOTOR CO., Dearborn.

Charles H. Eisenhardt, named manager, Electrical Products Sales Div., for AMERICAN STEEL & WIRE CO., Cleveland, to succeed **T. F. Peterson**, who recently resigned.

Harold R. Ryan, appointed superintendent, Open Hearth Dept., Campbell Works, of the YOUNGSTOWN SHEET & TUBE CO., Youngstown. Mr. Ryan succeeds **Thomas A. Cleary**, appointed general superintendent, Campbell Works and Struthers Works. **T. Bruce Carpenter**, named superintendent Brier Hill, Open Hearth Dept.

William Fienemann, appointed commercial research manager of WORCESTER PRESSED STEEL CO., Worcester.

Howard Holmes, appointed general manager of development engineering and sales, and **G. J. McCaul**, named assistant general sales manager for SIMMONDS AEROCESSORIES, INC., Tarrytown, N. Y.

Earl Hensal, named production superintendent of tire manufacture, Akron plant, of the B. F. GOODRICH CO., Akron, Ohio, and **William L. Carpenter**, made production superintendent, Miami, Okla., plant. **Mokal G. Morgan**, appointed superintendent, Tire Div., Kitchener, Ontario, plant.

Don Smith, named general plant manager, Peerless plant, and Superior plant, for WELLMAN BRONZE & ALUMINUM CO., Cleveland.

John T. M. Frey, appointed assistant manager, New York branch, for RAYBESTOS-MANHATTAN, INC., Passaic, N. J., and **Lamar S. Hilton**, named assistant sales manager, Abrasive Wheel Dept.

Louis A. Benek, appointed superintendent, Brick Mason Dept., Midland Works, of CRUCIBLE STEEL CO. OF AMERICA, New York.

John W. Thompson, named product manager of CARPENTER STEEL CO., Reading, Pa., and **William R. Staples**, appointed assistant to the manager of sales, alloy Tube Div., Union, N. J.

John B. Lawson, appointed manufacturing manager, Automatic Transmission Div. of FORD MOTOR CO., Dearborn.

Arthur V. Bender, formerly supervisor, General Engineering Dept., named chief engineer for the NATIONAL LEAD CO., New York.

Alfred L. Gostow, named plant manager, Dodge Forge Plant, for the CHRYSLER CORP., Detroit, succeeding **Grover Eads**, who recently retired.

Charles J. Dunlap, made traveling freight agent at Pittsburgh for the WABASH RAILROAD CO., St. Louis, Mo.

Thomas E. Boyle, appointed export manager of ROYAL METAL MFG. CO., Chicago, and **Robert E. Witts**, named assistant to the president.

Philip E. Church, named manager of CANADIAN AUTOMOTIVE TRIM, INC., Windsor, Ontario, a subsidiary of National Automotive Fibres, Inc., Detroit.

Robert K. Spofford, named director of purchases for JOHN A. ROEBLING'S SONS CO., Trenton, N. J.

A. Alven, appointed general sales manager for LIPE-ROLLWAY CORP., Syracuse, N. Y.

OBITUARIES

George R. Farrell, vice-president in charge of purchases for General Fireproofing Co., Youngstown, died recently.

William F. Munday, 54, deputy comptroller of the International Nickel Co. of Canada, Ltd., died Nov. 1.

Elmer S. Ward, assistant treasurer of United Engineering & Foundry Co., Pittsburgh, passed away Nov. 6.

Edwin G. Smith, 47, engineer with the Amsler Morton Corp., Pittsburgh, passed away Oct. 24.

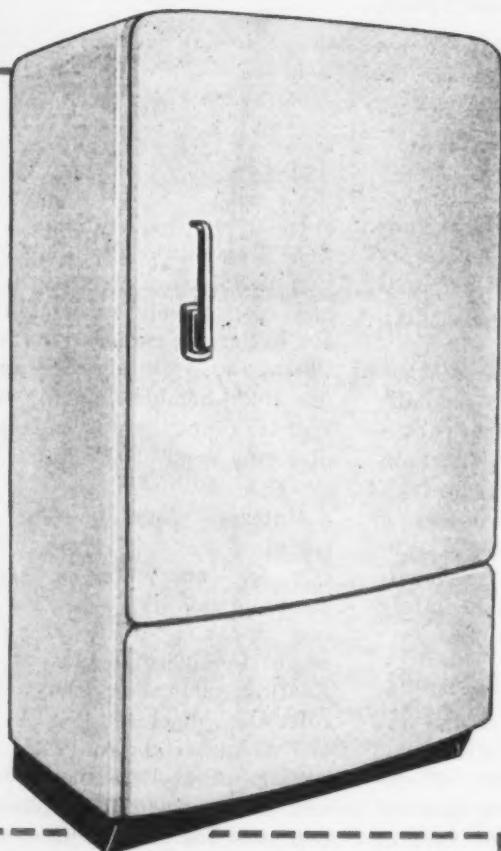
George L. Christy, 83, former chief engineer of Pittsburgh-Des Moines Steel Co., Pittsburgh, died Oct. 21.

A Case History for Steel Fabricators

HOW



HIGH-TENSILE STEEL CUTS COSTS



Refrigerator Manufacturer Found that High Strength Sheet Steel Saved 98c on Each Unit's Cost Over Carbon Steel

A refrigerator company specified N-A-X HIGH-TENSILE steel for its wrapper sheets. The higher strength of this low-alloy sheet resulted in drastic weight savings. Its inherently finer surface texture reduced finishing and painting costs. In addition to manufacturing advantages, N-A-X HIGH-TENSILE steel gives longer life and greater consumer acceptance.

N-A-X HIGH-TENSILE STEEL effected these economies:

- 14 lbs. of framing eliminated per unit.
- Faster production rates, fewer man hours in metal finishing department.
- Fewer sanding discs.
- Fewer rejections from paint conveyor line.
- An average of 5% less paint used per unit.



GREAT LAKES STEEL CORPORATION
N-A-X Alloy Division Ecorse, Detroit 29, Michigan
NATIONAL STEEL CORPORATION

On the ASSEMBLY LINE

AUTOMOTIVE NEWS AND OPINIONS

Ford cuts production schedules . . . Slowdowns in steel mills hit auto output . . . Colbert new Chrysler head . . . Aluminum seen big factor in transportation.



By WALTER G. PATTON

Production Cut—First permanent cut in auto production was announced this week by Rouge News, employees' newspaper at the Ford Rouge plant. No official announcement was made by Ford. Estimated employee layoff is 14,000. Layoffs will be spread over a period of months and will affect Ford plants all over the country. Overtime work will be stopped at many of these plants.

Three factors contributed to reduction in Ford schedules. Biggest factor is loss in production of cold-rolled sheet at the Rouge steel mill. The company publication said cold-rolled sheet output at Rouge dropped 25,000 tons during the 3 months ended Oct. 31. A further 1950 drop is anticipated. Other adverse factors affecting the Ford steel situation are gov-

ernment allocations and a substantial reduction in deliveries from one of Ford's major steel suppliers.

Slowdown?—It is ironical that at the time labor leaders are calling for an increase in steel capacity, steel workers are dragging their feet in some of the country's largest steel mills. Slowdowns in several steel mills caused a substantial loss of finished steel output during the period immediately preceding wage negotiations.

New Chrysler President—While not unexpected, timing of the announcement that L. L. Colbert will take over the presidency of the Chrysler Corp. has taken most of Detroit by surprise. For several years, "Tex" Colbert, head of Dodge Div., has been regarded as the heir apparent to the top executive position at Chrysler. K. T. Keller moves up to chairman of the Chrysler board and is expected to devote much time to the government's guided missile program. The announcement was not expected before the end of this month when Keller reaches the retirement age of 65.

Colbert has been carefully trained to take over his new responsibilities. A graduate of the University of Texas and Harvard Law School, he came to Detroit in 1933 as resident attorney. As a

member of the Chrysler Operations Committee and the Production Manager's Committee, Colbert has been closely associated with Mr. Keller. He managed the Dodge-Chicago plant which built engines for B-29 bombers during World War II. Since the war, he has been directing head of Dodge Div.

Materials Appetite—The appetite of a large American industrial city for raw materials such as steel and cast iron is always amazing. Speaking to the Flint Chamber of Commerce last week, K. T. Keating, general manager of Chevrolet Div., disclosed the Chevrolet bill of materials for Flint alone during an *average* month of car and truck production: sheet and coil steel for pressed metal operations—25,392 tons; gray iron castings for motors—26,873 tons; steel forgings for motors—7744 tons; miscellaneous metal parts for motors—4705 tons.

The total adds up to 64,714 tons of sheet steel, bar steel and gray iron and steel castings. This figures out to about 3 tons of metal per employee per month. Keating disclosed that Chevrolet is using as much steel per employee in a month for civilian production as it used in an entire year for military production.

Impact of Defense—Probable impact of military requirements



POTTER & JOHNSTON 5D - 2 Spindle - 9" AUTOMATIC

**PRODUCES ONE PRECISION-MACHINED FORGING
with every turret cycle**

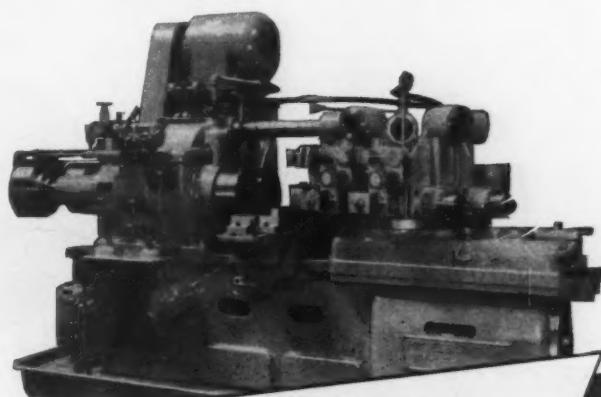


Costs are lowered substantially when work of this calibre is set up on a two spindle machine. This job, and countless others like it, belongs on the P&J 5D-

2 Spindle - 9" Power-Flex Automatic. The first series of operations (heavy lines in drawing) are performed on the rear spindle, and the second series of operations on the front spindle. Result: one completely precision-machined part finished with every automatic cycle of the turret. Note the double tooling on each turret face in view at left. The only manual attention is for loading, transferring the work from rear to front spindle, and unloading.

This way, floor-to-floor times are greatly reduced. Labor costs are profitably divided as one operator easily handles two or more machines. Considerable savings are also effected in floor space and power

consumption. P&J Tooling recommendations and time estimates based on your own sample parts or prints are gladly furnished upon request.



**POTTER &
JOHNSTON CO.**

PAWTUCKET, R. I.
subsidiary of PRATT & WHITNEY
Division Niles-Bement-Pond Company

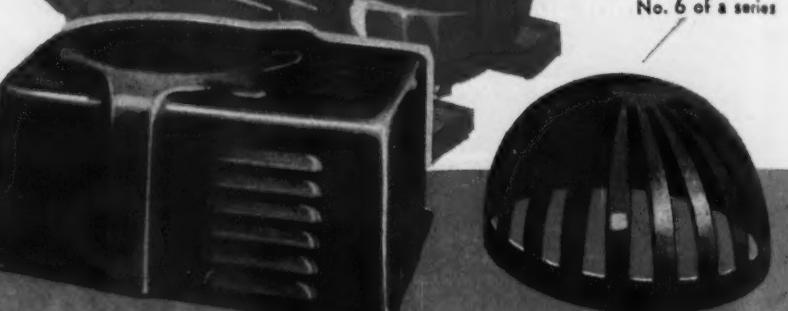


P&J 50 YEARS' EXPERIENCE
IN TOOLING FOR

Precision + Productivity + Economy

T and W

**DEEP DRAWN PARTS
HELP MANUFACTURERS
OF ELECTRIC MOTORS
AND GENERATORS**



No. 6 of a series

9 $\frac{1}{2}$ " deep,
16" diameter

10 $\frac{3}{4}$ " deep,
17" wide, 21" long

15 $\frac{1}{2}$ " diameter,
9 $\frac{1}{2}$ " deep

WHERE competitive conditions indicate lower manufacturing costs or improvement in product, perhaps redesign of parts is the answer. Here are some examples of how T & W engineers have helped others through adoption of deep drawn stampings. This Transue service is available to you without cost or obligation.

9 $\frac{1}{2}$ " deep,
20" diameter

8" deep, 14" diameter

7 $\frac{1}{4}$ " deep,
20" diameter

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CHICAGO, DETROIT, INDIANAPOLIS, CLEVELAND

Designers and Makers of
Deep Drawn Stampings



**TRANSUE &
WILLIAMS**
ALLIANCE, OHIO

For those manufacturers
having their own press
equipment, Transue will
gladly quote on die
requirements.

on the automobile industry was defined by K. T. Keller last week in a letter to Chrysler stockholders: "Credit restrictions on time payment terms already have affected adversely the retail (sale) by dealers of both new and used cars."

While their ultimate effect remains to be determined, Keller continued, it should be noted that the industry is on notice by the government that unless these indirect fiscal contracts accomplish a substantial reduction in the consumption by the industry of strategic materials needed for defense and stockpiling purposes, resort may have to be taken to direct control of the industry's production schedules.

Small Cars—Some of the best arguments for small cars were offered to the Society of Body Engineers last week by George Romney, Nash vice-president. Since World War II, Romney pointed out, the rate of new, one-car families has increased less rapidly than the rate of those owning two cars, which has almost doubled. Romney interprets this as a reflection not only of increased income but of a changing pattern of use created by the movement of city dwellers to suburban and rural areas.

Critical traffic conditions also call for a smaller car, he said. Romney showed that in the past 20 years the so-called small cars have increased in weight from 2100 to 3000 lb. Wheelbase has jumped from 104 in. to 114 in. Horsepower has climbed from 26 to nearly 90 for a low-priced car, he pointed out.

Lincoln Changes—Included in the list of changes and improvements in the new 1951 Lincoln introduced this week are: new rear quarter panels and fenders, new rear bumpers, new tail-light assembly, new roof panel and 29 pct larger rear windows and new front bumpers and grille.

Lincoln Cosmopolitan changes include a new grille and bumpers, new side moldings which now

reach the entire length of the car, and new hood ornament and fender ornament. Both Lincoln models have new trim schemes, new hardware and restyled steering wheel. Engine horsepower is increased from 152 to 154. An alloy engine block is specified.

Aluminum in Cars—Utilization of aluminum by the automobile industry in the postwar period has thus far been disappointing. Potential automotive use of as much as 2 billion lb of aluminum by 1965 was suggested to Auto Body Engineers by Clay P. Bedford, executive vice-president of Kaiser-Frazer.

Bedford's argument boils down to this: In comparison with pre-Korean war prices of cast iron and die cast aluminum for flywheel housings, aluminum is 2¢ cheaper, direct labor is 5¢ cheaper, burden on direct labor is 1¢ less, perishable tools cost 12¢ less, scrap and rework is 2¢ cheaper and freight costs are 7¢ lower. Looking criti-

cally at the economic situation, Bedford said, "It appears to us that aluminum will be one of the big factors in the progress of providing better transportation at lower cost."

Quote of Week—Probably the most pertinent comment on the recent elections came from an unidentified auto worker in Ohio who is quoted as saying: "Sure, I sent \$2 to PAC but I voted Republican."

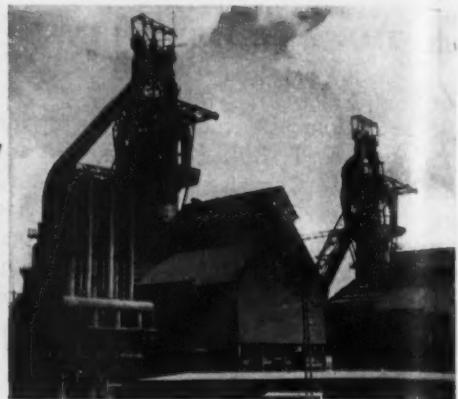
Clean Streams—An all-out campaign to reduce stream pollution is being carried on by the automobile industry. Last week, Buick announced that use of a shot blasting machine has cut by nine-tenths the sulphuric acid formerly used to clean small forgings at the Buick plant. A similar machine to clean larger forgings is on order. Buick has announced the latest available equipment will be installed in its new plant, now under construction, to keep air and water pollution at a minimum.

THE BULL OF THE WOODS

By J. R. Williams



1,841,000 TONS WITH ONE "NATIONAL" CARBON LINING! ...and still going strong!



Carbon is the ideal material for lining blast furnaces. One example proving this statement is the record of one of the largest blast furnaces in this country, in which a "National" carbon block lining was installed several years ago. This furnace has produced approximately 1,841,000 tons of iron as of September 1, 1950 and is still going strong with the original lining.

The terms "National" and "Eveready" are registered trade-marks of

**NATIONAL CARBON DIVISION
UNION CARBIDE AND CARBON CORPORATION**

30 East 42nd Street, New York 17, N.Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

Foreign Department: U.S.A.

MORE THAN DOUBLE THE USABLE LIGHT!

The biggest news since the invention of flashlights—the brand new, leak-proof "Eveready" No. 1050 flashlight battery—gives more than double the usable brilliant white light for critical uses than any other flashlight battery we have ever made.

**NO METAL CAN
TO LEAK OR CORRODE**



WEST COAST PROGRESS REPORT

Digest of Far West Industrial Activity—By R. T. REINHARDT



Pacific Northwest Spotlighted—Oregon, Washington, Idaho and Montana were described as an area where "increasing industrialization is inevitable" by H. H. Fuller, president, Bethlehem Pacific Coast Steel Corp. before the fourth regional technical meeting of the American Iron & Steel Institute in San Francisco last week.

Pointing out that these four states encompass 46 pct of the geographical area of the eight far western states and 13 pct of the continental United States and that their population is now in excess of 5 million people as compared with approximately 17 million for the eight western states, Mr. Fuller stated that this territory has almost unlimited power and water potential essential to a broad industrial base.

Industrial Nucleus—With more than half of the aluminum production facilities in the U. S. located in the Northwest, other major industries are being established to form the basis for large payrolls with consequent large consumer markets. Cited by Mr. Fuller were the huge atomic energy plant at Hanford, Wash., and the atomic plant now being built at Arco, Idaho, with investments of \$750 million and \$500 million respectively.

No Help to Pig Shortage—Bess No. 1, 1200-ton-per-day blast furnace at Kaiser Steel Corp.'s plant at Fontana was taken out of blast last week when a break-through developed. Extent of damage and down-time estimates were not available late last week but it is generally believed the repairs will be relatively minor.

The furnace was built in 1942 and relined about 2 years ago, and has been producing iron consistently above rated capacity. Bess No. 2 at the plant is under full blast.

German pig continues to arrive on the Coast with a recent shipment of 10,000 tons arriving at Los Angeles quoted at \$57.25 a gross ton CIF.

Japanese Steel Offered—Galvanized sheet steel from Japan is being advertised in Los Angeles at \$307 a ton f.o.b. the city. Observers rate the material as prime quality. How much is actually being sold at this figure, which is about three times the domestic price, is not known.

Labor Turnover Higher—Tightening of manpower in Los Angeles is reflected in employment turnover figures issued by the Merchants & Manufacturers Assn. which shows that it has increased from 2 pct in August to about 11 pct in October for the nonferrous metal industry

and in the iron and steel industry for the same period it has changed from 6 to 8 pct.

Rail Car Shortage Affects Foundries—A 15 pct increase in the number of sand cars available to serve foundries in the Los Angeles area has alleviated somewhat the shortage which has affected sand deliveries.

Changes Affiliations—Pacific Fittings, Inc., of San Francisco, producer of pipe fittings, nipples and pipe couplings, has become the Pacific Fittings Div., of General Metals Corp. The firm was organized in 1928 as the Pacific Nipple Co. and under the new affiliations it intends to expand.

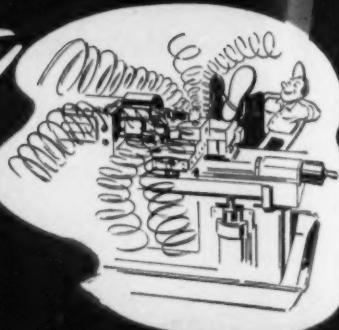
Sawmills for Tito—Monarch Forge & Machine Works, Portland, Ore., is working on an order from Yugoslavia for eight complete saw mills, which are scheduled for completion this week.

Largest Jobs—Griffith Rubber Mills, of Portland, Ore., is completing what is believed to be one of the largest jobs ever tackled in the Pacific Northwest. One-half mile of 30-in. pipe is being lined with a special rubber compound for use by the Crown-Zellerbach Corp. in the Camas, Wash., paper plant. The pipe will carry waste.

Extra Toughness



Better Machinability



• LATROBE •

DESEGATIZED BRAND*

HIGH SPEED STEELS

HI CARBON - HI CHROME DIE STEELS

Fewer Heat Treat Losses



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STEEL COMPANY

LATROBE, PENNSYLVANIA

Branch Offices and Warehouses
located in principal cities.

Since 1892
Latrobe Electric Steel Company
has been a leader in the production
of high quality steel products.
The company's products are used
in a wide variety of industries.
Brand names include: Latroline, Latro
Tough, Latro Chrome, Latroline
Tough and Latroline Chrome.
Machine finishes.
Tool and die steel.
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Wires, rods and
complete lines for
automobiles.

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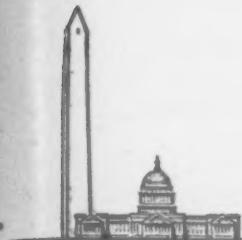
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THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

By EUGENE J. HARDY



Fair Deal Freeze—What the Republican upsurge in the congressional elections means to business can be summed up very briefly. Its main effect was to kill those portions of President Truman's Fair Deal program which the re-armament effort had not already put in the deep-freeze. It can be expected, however, that Mr. Truman will continue to plump for his program, including repeal of the Taft-Hartley Act.

While the vote rolled up by Sen. Taft in Ohio's industrial communities should eliminate the hoax about the slave-labor qualities of the T-H Act in the minds of most people, it will probably make little difference to the Truman Administration.

CMP Next June—The National Production Authority's timetable for instituting at least a modified Controlled Materials Plan would have such a system in operation by the end of June. Anticipating an increase in military appropriations to at least \$45 billion, NPA feels that CMP is an absolute necessity.

The reason for the delay in putting it into operation is that military requirements are not yet available for a long-range program which must be set up before CMP can really be effective. Meanwhile, NPA will continue to ride along with the DO military priorities and allocation programs for essential military-supporting activities.

No Price Controls This Year—While it was expected that the post of director of price stabilization in the Economic Stabilization Agency would be filled soon, immediate

price controls selective or otherwise are not a good prospect.

Primary reason is that an adequate staff for enforcement is not yet set up. A high ESA official, however, told **THE IRON AGE** that the only safe prediction that could be made is that there will be no general price controls by the end of the year.

"DO" Problems—Several industries in which raw materials are not a critical problem have been complaining to NPA about concentration of DO orders in a small number of plants. It is claimed that this affects both the quantity and quality of goods available to specific customers.

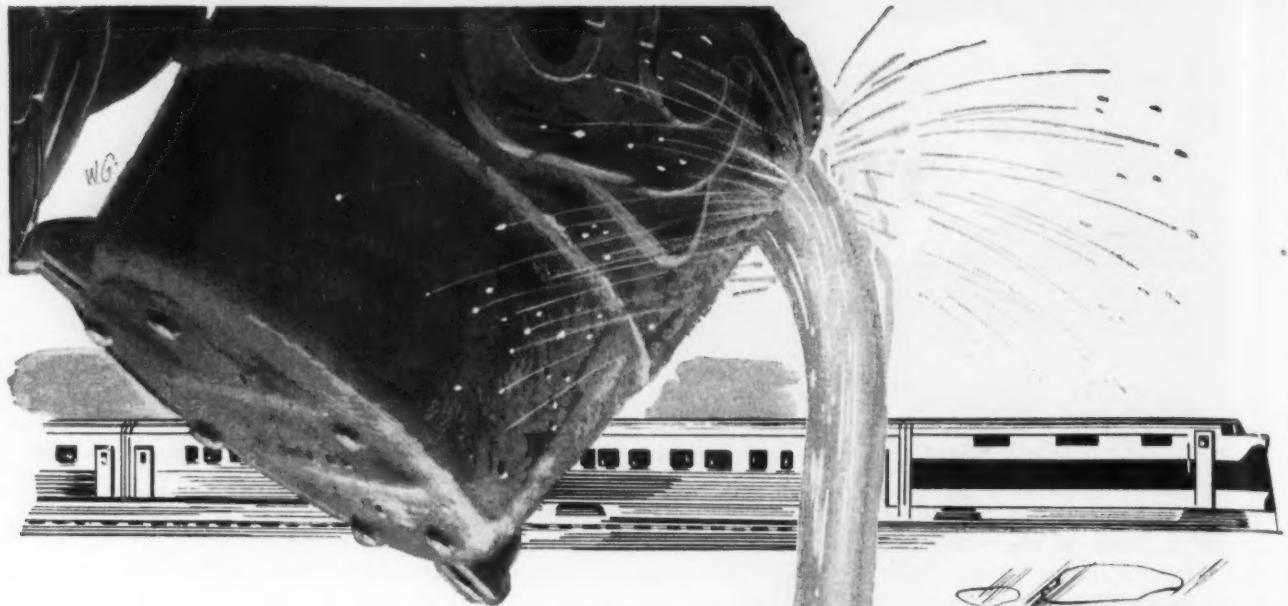
Should this problem spread throughout a substantial portion of industry, where raw materials are not short, it can be anticipated that NPA will issue a general order setting maximum percentages of DO orders which must be accepted by manufacturers in a whole host of industries. This, of course, is the way the problem has been handled for steel and aluminum.

How Much Steel???—Secretary of Commerce Sawyer told **THE IRON AGE** last week that while he anticipated continued expansion of the

steel industry beyond the goals already announced, he knew of no agency or individual who could honestly and frankly say exactly how much steel was needed in light of present knowledge of military requirements. Mr. Sawyer commented that there are a variety of experts, some better than others.

Power Boondoggler—The much-disputed dream of harnessing the Passamaquoddy tides for generating electric power, kept alive for more than a decade by followers of the New Deal, has bobbed up again. This time it is in a report on the subject by the International Joint Commission of the United States and Canada following a study of the matter by engineers appointed by the IJC at the request of the two nations.

The gist of the report is that there is no doubt that such a project "can be physically engineered, constructed, and operated." But the IJC adds that the information now available is not sufficient to determine either the cost or whether the result would be worthwhile economically. The report estimates that another \$4 million would have to be spent to find out the answer.



**cut operating costs, increase payloads
—reduce weight or increase strength**

with Inland HI-STEEL

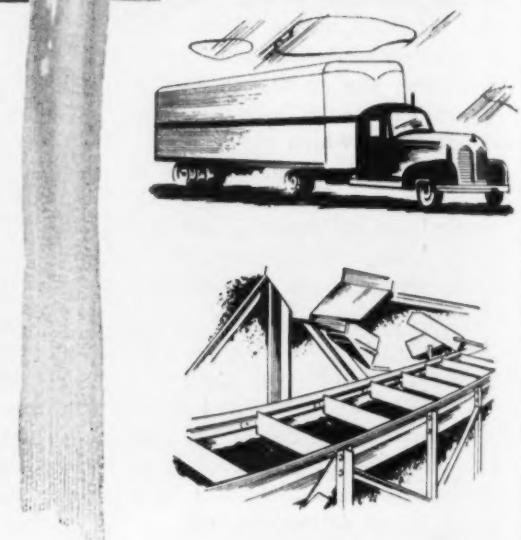
Inland HI-STEEL's high strength-to-weight ratio and its abrasion and corrosion resistance permit longer life, weight reductions up to 25%, and greater strength than ordinary structural-grade carbon steel.

These properties permit three different approaches to the problems of design and construction:

1. To design for same strength with reduced weight and greater payloads;
2. To design for greater strength with same weight and payload; and
3. To design for compromises that will allow variations of these qualities.

In each case operating costs of mobile equipment are greatly reduced.

And Inland HI-STEEL can be worked either hot or cold—punched, drawn or otherwise fabricated—welded or riveted—with little or no change in shop practice.



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OTHER PRODUCTS: BARS • PLATES
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TIN PLATE • SAFETY PLATE • PILING •
RAILS • TRACK ACCESSORIES.

COMPARISON OF AVERAGE PROPERTIES OF HI-STEEL WITH ORDINARY STRUCTURAL GRADE CARBON STEEL		
Tensile Properties ($\frac{1}{4}$ " Plate)	Inland HI-STEEL	Ordinary Structural Grade Carbon Steel
Yield Point (psi)	56,000	35,000
Ultimate Strength (psi)	73,000	66,000
Elong. in 8" (%)	25	25
Endurance Limit Fatigue Strength (psi)	49,000	33,000
Impact Resistance (Charpy Impact—ft. lbs.)		
Temperature		
80° F	55	36
32° F	43	33
0° F	36	26
-25° F	34	6
-50° F	30	2

Good Public Relations Aid Wage Negotiations



by JOHN G. MAPES, President
Group Attitudes Development Corp.
New York



Intelligent use of public relations can build confidence in and respect for a company among its workers and in its community. This pays big dividends during wage negotiations. It does a company little good to offer fair and sound terms if their workers and community don't understand or believe the terms are fair and sound.

HUNDREDS of companies with union contracts will find their relations with their employees and their communities put to a severe test during the next several months.

Wage negotiations will be taking place in an atmosphere supercharged with economic and emotional uncertainty caused by war. Also, the pattern already established in some industries may be difficult or impossible for others to follow. Under any circumstances wage negotiations present a major problem in public relations; today the problem is magnified many times.

Companies even in the same industry will naturally react differently to whatever wage demands confront them. But there is no conceivable reaction—even complete capitulation or a follow-the-leader policy—which automatically produces for the company a favorable public and employee reaction. It is not enough to meet the union's demands or even to raise wages in an-

teraction. The record of the past fifteen years proves that point beyond doubt.

The company must make sure that employees and the community realize that the company's current policy on wage increases is fair and reasonable from the human standpoint, is sound from the economic standpoint, and will produce the greatest good for the greatest number of people for the long as well as the short term.

If employees and the community are not convinced of those principles, regardless of what the wage agreement is, they think the company is just the reluctant partner in a shotgun wedding. They give the company no credit for its policies, no matter how sound and progressive they may be, and no matter how closely the final terms of settlement agree with the company's original position. Under such conditions management comes out of the negotiations with no more public appreciation than before and perhaps with less.

CONFIDENTIAL INFORMATION

On the other hand, favorable employee and community attitudes toward the company's stand produce an entirely different picture. Where favorable attitudes are developed, and they can be no matter what stand the company takes on wages, the company emerges as a leader, not just a punching bag. This gives it a chance to dramatize the good things which private enterprise stands for.

The question is, in what ways can a company work to develop community and employee appreciation of its position?

Not too many years ago, when public relations procedures first began to be used in connection with wage negotiations, the common practice was to issue a formal company statement. This usually consisted of a single detailed, legalistic description of the company's position. It represented a long stride beyond the earlier, say-nothing days. It spread the company's position on the record. But the form and content had little appeal to anybody except other business

men and those few people who form opinions solely on the basis of cold facts and logic.

A real advance was made when the single statement gave way to periodic news releases during wage negotiations. Still more progress came when other public relations methods, including paid advertising, were employed to broadcast and reiterate the company's story, particularly when these were addressed to "You, the public" and "You, the employee."

When the statements and advertisements had a genuine and not synthetic appeal to employees and communities some remarkable results were obtained. Three years ago, for example, employees in a plant in western New York State struck for higher wages. The CIO union involved was trying to establish a new wage pattern in the industry.

For a month the company said nothing publicly and the end of the strike seemed no closer than the day it started. Finally the company and its public relations counsel prepared and

sent out a series of five open letters to employees. They were mailed at intervals of three or four days.

The letters were simple and direct, and each one emphasized the fairness of the company's position and the steadily mounting loss of pay which every employee was suffering.

Although the plant was a relatively small one, and located in a big city, the letters were reprinted in the form of paid advertisements in every newspaper in the city.

Loud were the howls from the union, and a counter-blast or two was issued. But before the sixth letter could be mailed out the men voted to go back to work on virtually the same terms which the company had offered when the strike began.

Less than one year ago one of the larger steel companies successfully used the basic appeal to the self-interest of its employees and their families in telling the story of its offer of a contributory pension plan. The facts were publicized in several different ways, but always the story was told in terms the employee and community could understand and appreciate. The story was so effectively presented that when the employees had a chance to choose

between the contributory plan and one to which they did not have to contribute, they chose the former by a large majority.

Companies which have kept up a continuing program of communicating with their employees and their community will have an easier time winning sympathetic appreciation for their stand on wages than companies which habitually say and do nothing.

Both employees and the public are likely to be somewhat surprised when a traditionally aloof company suddenly gets on the stump and starts to act friendly. There may even be some people who will wonder whether the company is sincere in what it is saying. But what of it?

A well-planned, properly executed community communications program cannot possibly produce any repercussion unfavorable enough to offset the benefits a company will receive. It is no longer conceivable that any company which considers itself progressive and efficient in manufacturing and distribution can neglect being



progressive in working for the best possible relations with the men and the community.

The decision to embark upon a communication program should be made solely upon the basis of the cash values to be gained, the same way a decision is reached in buying new equipment or expanding a plant. That is just plain good sense and sound business judgment.

The board chairman of a steel company which conducts one of the most effective community relations programs in all of industry, recently told the author in a private conversation:

"Many business men have told me that while they don't doubt our efforts have done us some good, they do question whether the results measure up to the cost. I have a stock answer.

"I tell them that this company is in business to make a profit, just like others, and that I have the same responsibilities to stockholders that they do. I am prepared at any time to compare the cost of maintaining good employee and community relations with the value received. So far we're well in the black on our community relations account and always expect to be."

Keep The Program Simple

A company does not need to be big to profit from good community relations, nor does it need an elaborate community relations program. Just keep the program simple, keep it practical and follow a few general rules that apply to any company in any industry.

Here are a few things to keep in mind against the time when wage negotiations come up.

Don't rely on constant repetition of unadorned facts to make an impression on people. That may be the way to teach $2 + 2 = 4$. It is not the way to develop favorable attitudes and opinions towards your company.

Don't think that simple insertion of the word "you" into a category of a company's position will make the public accept that position. That is a shop-worn device which never was very effective.

Do try to express your story sincerely from the other fellow's point of view. Ask yourself "how would I react to this if I were one of the men in the plant? How would his wife take it?"

Don't rely entirely on the printed word or the public statement to get your ideas across.

Do use whatever personal approaches are practical, such as meetings, informal talks to groups of employees and community residents, even television and radio.

Don't overlook the value of writing to employees at their homes. This penetrates a lot of iron curtains because wives read mail, too.

Do make use of the entire management team to tell your story—works managers, foremen and supervisors. They know more people than top management.

Do keep newspapers as up-to-date as you can on what's going on. The boys on the other side of the fence from you are masters at that and it has paid off for them.

Do be sure that whoever handles press relations for your company knows what is going on. Newspapermen who come to think he does not know his business will also think you don't know yours either, or you would have kept him informed. If your press relations man lacks discretion, he is not the man for the job.

Don't be trapped into an agreement to say nothing about developments in the negotiations. Remember how the hush-hush Little Steel Wage Hearings came out, as compared to the fully publicized fact-finding hearings last summer. Your opposition has a habit of offering such an agreement only when it, not you, will be the winner.

Companies which observe these common-sense rules before, during and after the wage negotiation period can count on one sure gain, regardless of how the negotiations come out. They will stand out in the eyes of their employees and community as worthy of respect and confidence and not as a ruthless example of all that is wrong with capitalism.



In these days of increasing public apathy towards private enterprise that alone would be worth the price of admission. Any company can benefit in a community that feels the company is actually one of them. Communities don't just happen to adopt that type of thinking—they have to be sold. They aren't usually sold on just one "open house" show a year or other sporadic programs. The job is an every-day affair.

Corrosion Resistance of MAGNESIUM ALLOY Tested

ALTHOUGH commercial magnesium alloys are usually resistant to ordinary kinds of atmospheric corrosion, they may corrode seriously in certain industrial atmospheres or along the sea coast, and especially if they are in direct contact with salt water. To learn more about the suitability of these materials for aircraft use, the National Bureau of Standards, at the request of the Bureau of Aeronautics, Department of the Navy, has conducted an extensive investigation of the resistance of wrought magnesium alloys to corrosion under stress both in a marine atmosphere and an inland atmosphere.

Investigations included both sheet and extruded alloys, see table. Tests were made with $\frac{1}{2}$ -in. reduced-section standard ASTM tension specimens for sheet metals. Grip ends were 1 or $1\frac{1}{4}$ in. wide, instead of the standard $\frac{3}{4}$ in. The purpose of this added width was to minimize the failure of the specimens due to stress corrosion around the bolt holes. The specimens were stressed in tension and exposed to the inland atmosphere of Washington, D. C., and to the marine atmosphere of Hampton Roads, Va., the latter on a platform built out over the tide-water. Unstressed specimens were subjected to the same corrosive conditions so the effect of stress in increasing corrosion damage could be evaluated. Laboratory tests were also made by continuous and intermittent immersion of stressed specimens in a sodium chloride-potassium chromate solution (NaCl, 35 g per liter; K₂CrO₄, 20 g per liter) and in a 0.01-pct NaCl solution.

Failures Automatically Recorded

Specimens were stressed by weighted levers and were supported vertically in test solutions. For intermittent immersion tests, the corroding solution was raised into the test cells by means of compressed air, wetting the specimens four times per hour. For weather exposure tests, the specimens were supported and stressed in a similar fashion but were left exposed to the atmosphere. Breaking of a specimen automatically recorded the time required for failure.

Results showed that the susceptibility of magnesium alloys to stress corrosion in the weather increased with aluminum content up to about 6.5 pct. Specimens stressed at the Washington, D. C., weather exposure site failed in shorter periods of time than those exposed to the same

COMPOSITION OF MG ALLOYS STUDIED

Designation	Alloy Content, Pct			
	Al	Zn	Mn	Zr
ZK-60*	...	8.7	0.07	0.6
M1	...	...	1.5	...
AZ31X	3.0	1.0	0.3	...
AZ51X	5.0	1.0	...	...
AZ61X	6.5	0.7	0.2	...
AZ80X	8.5	0.5	0.2	...
M1-Clad AZ31X	...	...	...	...
Cladding	3.0	1.0	1.5	...
Core	...	...	0.3	...

* Dow Chemical Co. designation; other designations are ASTM.

stress in a marine atmosphere. Damage to unstressed specimens at the Washington site was small as measured by losses in tensile properties. The AZ31X-h material, after being exposed unstressed for 750 days, had a tensile strength of more than 94 pct of that of the unexposed material. Its elongation was still more than 85 pct of original.

The M1-clad AZ31X-h alloy was the most resistant to stress corrosion. Specimens of this alloy were exposed in a marine atmosphere, stressed to 30,000 psi (90 pct of the yield strength), for 500 days without failure.

Among the bare alloys, the M1-h sheet and the ZK-60 extruded material were outstanding in stress-corrosion resistance. After 1175 days of exposure to the weather at Washington, D. C., under a stress of 16,000 psi (55 pct of yield strength) the M1-h sheet alloy had not failed. First failures of the ZK-60 extruded material exposed at the same locality under a stress of 20,000 psi occurred only after 580 days, while specimens of this alloy stressed to 18,000 psi had not failed in more than 1010 days.

Of the remaining alloys, the bare AZ31X-h material proved the most resistant to stress corrosion. However, specimens of this material stressed to 16,000 psi (about 50 pct of the yield strength) and exposed to the weather at Washington failed after an average exposure period of only 151 days. The AZ51X, AZ61X, and AZ80X alloys were all susceptible to stress corrosion when exposed outdoors under stresses of 20,000 psi or more. The extruded AZ80X material was more resistant to stress corrosion in the heat-treated and aged condition (AZ80X-HTA) than in the "as extruded" condition.



Flexibility

Key to Efficient Gear Production

Mass production of over 200 types of gears, plus much job lot production, is done by Caterpillar in a single department. Flexibility of machines and department layout, handy reference files of production data, help to keep production highly efficient.

By JOHN ELWOOD
Factory Manager,
Caterpillar Tractor Co.,
Peoria, Ill.



JOB lot production of experimental, out of stock, and replacement gears has been effectively combined with mass output of over 200 types of current production gears by the Caterpillar Tractor Co. With very few exceptions, all of the hundreds of different gears required for the many types of Caterpillar tractors, engines, and earth moving equipment are now processed in a single independent gear cutting department in the company's Peoria plant. Indicative of the overall efficiency is the transmission gear cutting line, which handles as many as 16 different gears for a single transmission and operates at better than 90 pct efficiency.

A major problem in re-aligning facilities for these 200 different types of gears stemmed

from the established trend toward continuously higher quality and closer tolerances in Caterpillar gear specifications particularly for the larger and more complex types of equipment.

Producing efficiently is a problem, as a natural consequence of the necessity of making hundreds of different gears for current assemblies plus job lots of replacement gears as well as some experimental gears for the research department. Development of efficient time-study procedures, routing methods and the use of versatile machines where changeovers are frequent in large part has held this to a minimum.

In addition, an extensive machine setup card file has been developed which greatly lessens the time required to determine proper equip-

ment, feed gear ratios and other information for almost any gear.

Paralleling a total of three gear production lines is a short broaching line where the bores of rough forged gear blanks are broached to size, keyed, and splined, on horizontal broaching machines.

All transmission gears used in Caterpillar equipment are processed on the adjacent production line, from rough turning to finish shaving and final inspection prior to heat treat.

The next two production lines handle job lot manufacture of miscellaneous and noncurrent gears which are no longer in production but are needed for replacement parts in older models of Caterpillar equipment. In addition, the lines are set up to handle full production of all timing gears made in the plant.

Near the finishing end of the lines is a centrally-located gear checking laboratory. Grinding of gear surfaces, when required, is handled on a separate line similar to the broaching setup.

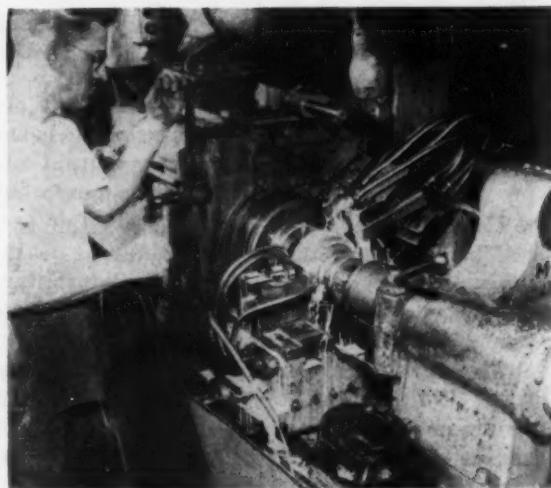
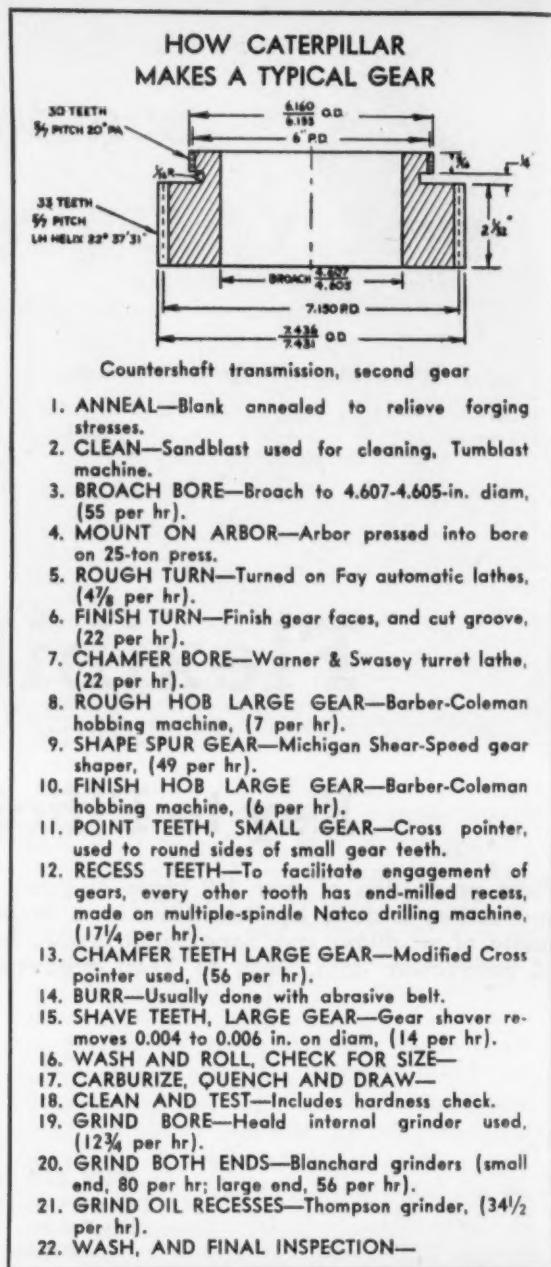
Almost all gears manufactured in the plant are made from forgings. After forging, the blanks are stress relieved prior to machining, which practically eliminates distortion in the finished gears and in many cases eliminates final grinding of gear faces and bores.

To minimize inspection difficulties, all hardness tests run in the plant employ a standard 3000 kg load on the Brinell ball. The requisite hardness specifications for any job are put directly on the blueprint of the part as the diameter of the ball indentation in millimeters. For instance, a majority of the transmission gears are required to show a hardness after stress relieving of 4.4 to 4.6 mm, which is equivalent to about 170 to 187 Bhn or 87 to 91 RB. Conventional optical instruments are used to measure the impression width, but no conversion to a hardness number is required. This helps to eliminate errors and wasted production time in the processing of steels which may not harden properly or of improperly stress-relieved blanks.

Gear Blanks Broached or Drilled

After annealing, the gear blanks are brought to one of five horizontal broaching machines for two-step broaching of the shaft hole. For the rough broaching operation a standard round bar is pulled through, leaving 0.012 in. for finishing. In a few cases, the rough forgings are drilled rather than rough broached.

A combination broach is used to spline or key the bore and also remove the 0.012 in. of stock from the ID. Generally, the finish broaching operation finishes the bore to final size



A AUTOMATIC LATHES at the head of the transmission gear line rough and finish turn the gear blanks, using carbide tooling.

within 0.001 to 0.002 in., as specified and grinding is not required.

The broached hole serves for locating, and blanks are pressed onto arbors taken from racks located conveniently to the Fay automatic lathes used for turning and facing of all gear blanks. These lathes are grouped at the head of the first two production lines. Usually carbide tools are used.

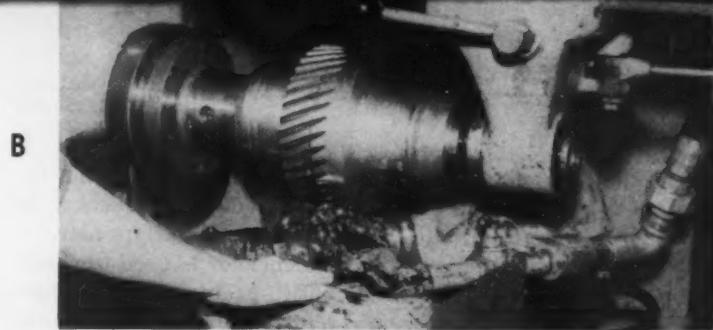
In the case of splined bores, the major spline diameter is used for locating. Of course, since both the major and minor spline diameters are finished in a single pass of the combination broach, it is immaterial which diameter is used for locating and in some operations, locating is from the minor diameter.

Depending upon the particular gear, the teeth are either hobbed, shaped or cut on a Michigan Shear-Speed gear shaper. One interesting example of the method by which Caterpillar engineers have simplified tooling problems is the production of several gears in the D-8 transmission. The shifter collar links the transmission coupling gear with the spur gear of the low speed reverse cluster and the spur gear of the countershaft second gear. All three spur gears are cut on the shaper using the same tools. Burrin prior to shaving is done on belt type burrin machines wherever possible. Practically all gears are shaved.

Spot Checks Every Shift

Spot checks are made at every change of shift, every change of tools, and before and after shaving. Included are checks for tooth contour, diameter and pitch line runout. Final inspection prior to heat treating is done with master gears on a Brown and Sharpe roll checking fixture to determine pitch line runout, backlash, size and interference. A rack of master gears for each gear type in current production is located conveniently to the checking operations. A second roll check is performed before the gear goes to final assembly.

Gears which are pulled for line spot checks are sent to the gear laboratory adjacent to the production lines. Two Michigan lead checkers are first in the checking line. Next are two involute checkers for control of both involute and tooth spacing. Worms are checked for lead



B HOBBING low-speed reverse cluster drive gears is done with two gears placed face-to-face in hobbing machine.

C ROLL CHECKING countershaft second gear at end of production line, includes checking pitch line runout, backlash, size, interference, and close visual inspection.

D GEAR LABORATORY, completely equipped, is centrally located in gear production department.

E OIL PUMP gears are finished on a Michigan rack shaver.

F FINISHING MACHINE, one of few located outside gear department, shaves timing and drive gears on crankshafts over 9 ft long.

error, wobble, root diameter, runout and involute on the teeth. A small hob checker is also available, in addition to a gear speeder.

A Michigan involute checker is used to check both involute and tooth spacing on spare and replacement gears, since individual base rolls are not required for this machine. Roll checking, as well as hardness testing, is done on the line and not in the lab.

After final inspection at the end of the production line, gears are sent to the heat treating department for carburizing. They are quenched in dies or on a plug so that little or no grinding is subsequently required. The gears are then drawn and a final hardness check of each batch of gears is recorded in a job card file for later process analysis of any gear failures. Although there is a maximum allowable variation of 0.002 in. for the minor or major spline diameters, heat treatment results in no measurable variation of the pitch diameter. When necessary, some surfaces are finish ground.

A Bullard-Dunn cycle cleaning process used for scale removal after drawing includes a caustic bath, hot and cold water cleaning baths and electrolytic leading. An advantage of this process is that it tends to open up cracks if there are any hidden flaws in the metal. Visual inspection provides further insurance that any defective gear will not reach final assembly.

Tapered Surfaces Are Ground

Where ends of the bore in the gear blank have been tapered to form the outer race for a roller bearing, the tapered surfaces are ground after hardening and drawing. All ground gears are sent to a washer and then to final inspection where all major dimensions are rechecked.

The third and fourth production lines in Caterpillar's gear department handle replacement gears for Caterpillar equipment no longer in production, and also manufacture both current and service timing gears. General procedure on replacement and experimental gears is similar to that for transmission gears.

The general run of timing gear blank forgings, however, are heat treated and annealed for grain refinement to a hardness of 241 to 285 Bhn before any machining operations are performed. For gears which are subject to high loads and excessive wear, or in the case of gears on which a number of wearout reports are received, hardness specifications are increased to 302 to 363 Bhn.

A research department maintained at the plant develops new geared equipment, including transmissions, in anticipation of customer demands. For these experimental units, forgings are made specially or are bought, usually in lots of 5. After all necessary modifications

have been made and the tests appear to be successful, the design goes to the planning department to determine time, space and machine requirements.

In starting a new type of gear through the production line, or in the event of a change in steel or heat treat procedure, test lots of about 10 pieces are first processed completely to check such matters as growth, distortion, unwinding of helix. All important dimensions are checked and recorded after each operation and an average allowance made from the results to insure that the finished gears will have the proper size. To account for expansion during heat treating of a countershaft second gear, for example, it has been determined that all dimensions as machined should be minus 0.005 in.

Index Cards Cut Calculating Time

To reduce the time for calculating the feed gear ratios required to produce a new or replacement gear, an index system consisting of a double card file is maintained. The first file carries pitch, helix angle, hand of helix, number of teeth and old part numbers of every gear ever produced in quantity. If the gear actually has been produced before, the old part number is taken and a second file covering gears which are or have been on the production line is entered with this number. Here are given the basic figures in the calculations, the type of machine for which the calculations had been made, and the feed gears required. If the desired gear is not listed in the file, an even more extensive tool room file, containing records of experimental and special gears, may be referred to.

The time saving, around $\frac{1}{4}$ hr per setup, is considerable, taking into account the fact that Caterpillar currently is processing some 200 types of gears on a production basis. The constant introduction of new lines of equipment and redesigns of standard models also involve numerous changes of gears on the production line. In addition, setups must be made to process small lots of experimental and replacement gears.

There are a few gears which are not cut in the gear cutting department. Typical are the timing gears on crankshafts. Transferring these shafts to the gear department for gear cutting would involve excessive materials handling. Even the smaller 4-throw cranks for the D-8 engine weigh over 800 lb each and are 5 ft long.

The finishing machine for crankshaft timing gears has a standard Michigan Model 862 back bed, but the front bed is 4 ft longer than standard, making it 11 $\frac{1}{3}$ ft overall. The column and cutter slide, mounted on the back bed, have recently been modernized and now incorporate underpass and traverses as well as transverse movements. Rest plates assist in mounting the cranks between centers and driving plates are provided to drive the cranks.

Special Tooling Pays Off

ON SHORT RUNS

Many shops fear small production quantities don't justify special tooling cost. In this shop, where few runs exceed 300 units, Automatic Transportation Co. offers examples of setups, fixtures and tooling which return more than their cost.



By **EMIL L. MESCHLER**
Toolroom Foreman,
Automatic Transportation Co.,
Chicago

MANUFACTURE on a small to medium quantity basis imposes conditions quite different from those met in high production plants. It does not follow, however, that efficient tooling cannot be employed, especially where repeat lots are sure to be required at intervals. This is demonstrated at the plant of Automatic Transportation Co., Chicago, where electric industrial trucks in many models and sizes are in recurrent production. Though there are a few components common to several models or duplicated within each truck, most parts are not often made up in lots exceeding 300 at a time. In this plant there are many examples of how, on short runs, good tooling, with economical output, can keep costs within bounds.

Steel parts such as the crowned surface rollers shown in Fig. 1 could be produced singly on almost any lathe. But costs come down when a half dozen blanks are mounted at a time on an arbor in a lathe such as the Lodge & Shipley Copymatic and have the crowned peripheries turned in succession on a semiautomatic basis. In this case, the setup is very simple and the only special tool is a master made either in one piece

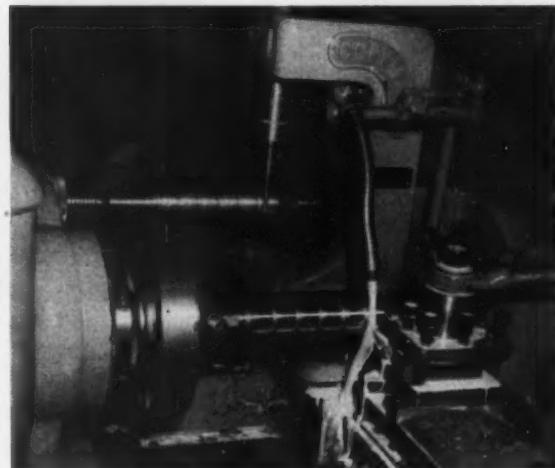
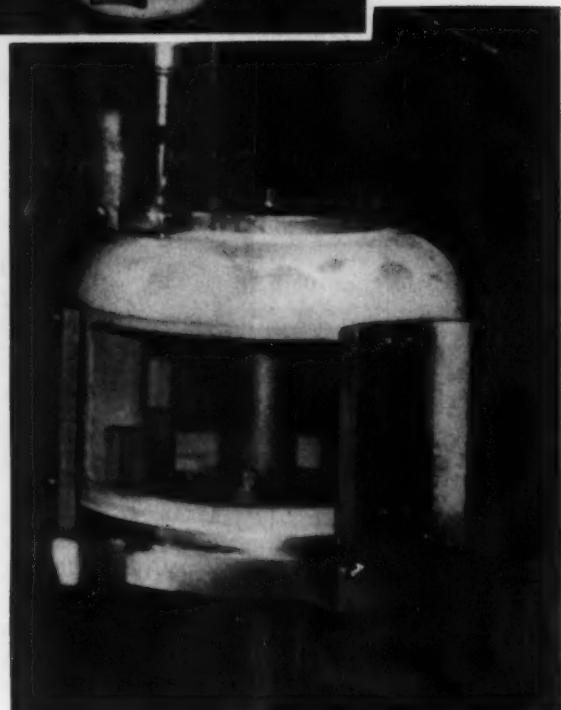
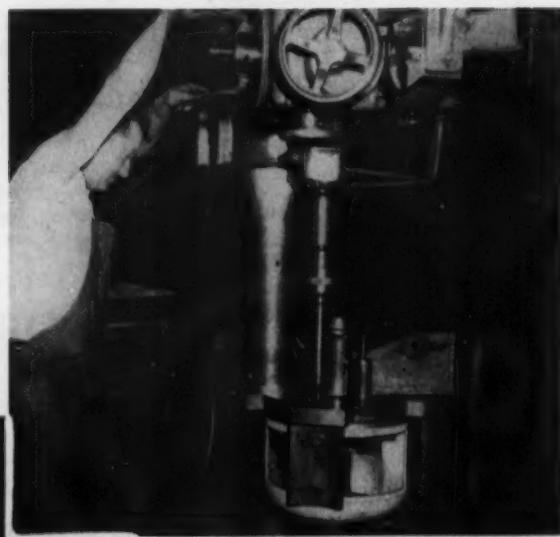
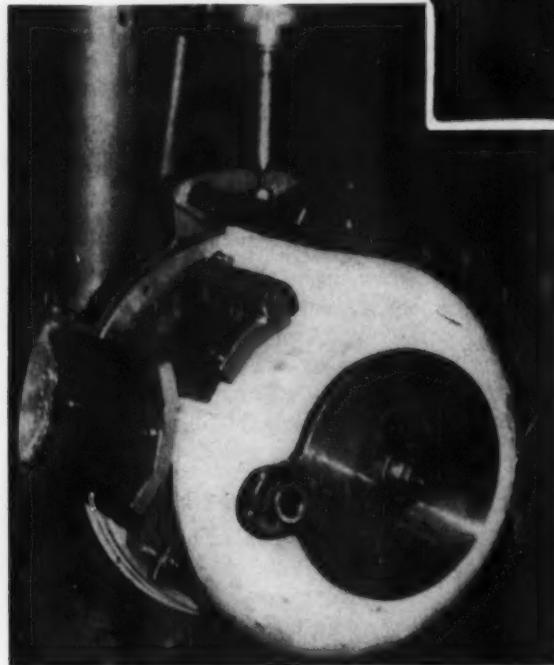


Fig. 1—Crowned rollers are turned six at a time in this copying lathe setup. Since setup replaces former method of making all rollers one at a time, the six made individually to serve as masters, in effect cost nothing.

or by clamping several rollers on an arbor with spacing washers between. A single-point tool then does the turning following the stylus or

FIG. 2 — Double-trunnion fixture enables indexing to holes in top face (top), each of four sides (left) and bottom face (right) in one drill press setup.



tracer that is made to follow the master. The operator need only load a set of blanks, each separated by a washer as on the master, put the arbor between centers and start the lathe. He can then do other work or tend another machine while the lathe runs automatically. A similar setup is used also for turning stepped shafts.

More elaborate is the double-trunnion indexing fixture, shown in use on a radial drill press in Fig. 2, for drilling and tapping all holes in six sides of a power unit housing. In this case, the work piece is clamped in a spider. The spider is indexed about its pivot 90° at a time to complete four holes in the top face. Then the spider portion is turned bodily about the other trunnion of the fixture to bring the spider axis horizontal after which two side holes are drilled in each of four faces, indexing the spider 90° between each pair. Bushings in the spider guide the drill.

Finally the workpiece and fixture are indexed bodily again about the horizontal trunnion axis to

bring the spider axis vertical as shown but with the face that was up during the first operation now down and the opposite face in position for drilling. A double-trunnioned fixture of this type is not inexpensive but its cost is soon paid out of savings and correct hole location is insured partly because holes from all six sides are produced without removing the casting from the spider in which it is clamped initially.

Quite different are the problems involved in making right angle bends in steel bars 2×6 and $2\frac{1}{2} \times 7$ -in. to serve as forks for lift trucks, as pictured in Fig. 3. One of the problems in making such bends in heavy stock is to keep the metal from thinning out at the bend, which is the point of maximum stress in service.

To make such a short radius right angle bend in stock so thick, the bar must be heated. This is done in a special small gas-fired furnace designed to heat only the bend area. With 2x6-in. stock, this takes 7 min, but this time cannot well be shortened without installing a large furnace or induction heating unit at high cost. Because the furnace is small, it can be located close to the 400-ton Cincinnati press brake employed for bending. This helps in getting the bar into bending position and completing the bend before the heated portion cools unduly.

The secret of making the bend without thinning the metal in this area is to employ a die that confines the metal endwise while the bend is made. When the center of the bar is up to a bright red heat, the bar is pushed on edge along flanged rollers on one side of the die. Then it is laid flat with its ends fitting against blocks which are then tightened by driving in wedges that press the blocks tightly against the end of the bar. This makes it impossible for the bar to lengthen, as it would unless confined, when the bend is made. And, since the metal bend cannot flow longitudinally, it remains at the bend so that the metal at that point is not thinned.

Bending Takes A Few Seconds

As indicated in Fig. 3, the two halves of the die are hinged to rock on pins, supported in a central portion attached to the press bed. As the press ram descends, the inside radius formed is that on the punch or upper half of the die attached to the ram. Air shock absorbers are applied to the die so that the two halves return slowly to horizontal position when the press ram is raised. Bending itself requires only a few seconds, but, including the time for heating the metal and loading and unloading the die, the time per piece is 8 to 10 min.

This is not a fast rate but it is faster than forging would be. And it is done in the plant on a press brake also useful for other work, without installing forging equipment or depending on an

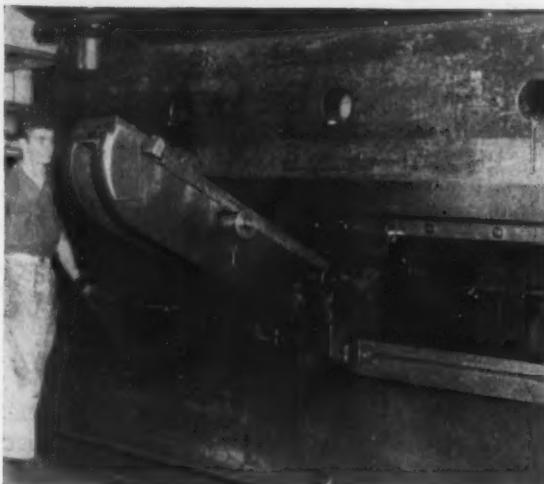


Fig. 3—Heavy bar being bent to make truck forks. Ends of bar butt against blocks to prevent longitudinal expansion, joint thinning, during bend.

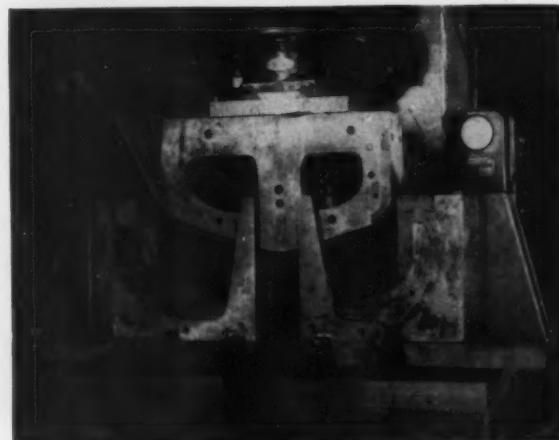


Fig. 4—Forming bumper in hydraulic press. Same die can be used for two sizes of bumpers.

outside forge shop. Consequently, the cost result is favorable, especially since the die cost is not large and the die can be used for bending forks of different sections and with other dimensions differing.

Another bending job, one done cold on lighter stock, is accomplished in the die shown closing in Fig. 4. This die handles strips cut from plates, the blanks measuring $\frac{3}{8} \times 5\frac{1}{2} \times 56\frac{1}{2}$ in. The hydraulic press used is a Hannifin of 150-ton capacity. Parts produced are bumper plates and the same dies can be arranged to produce two different widths of bumpers. For the narrower bumper, the die is equipped with an insert at the right side.

As the punch is lowered, there is, of course, considerable friction between the upper corners of the die and the strip as it is formed and pulled down into the die. To prevent galling, blocks of Timken graphite steel are set in at the corners. They resist abrasion and do not mark the steel. At the center of the bottom half of the die is a separate block of steel formed to fit the long bend at the center of the piece. This block, movable vertically, is operated by a small hydraulic plunger and is forced down as the die is closed. When the die opens, the block is elevated and acts as a pushout.

A die of this kind can be built up largely from heavy plate and is moderate in cost. Although bending could be done by other means, work would be slower and less precise and parts might give trouble and cause delays in assembly, hence the die soon saved its own cost.

When the armatures of motors used in electric trucks are pressed over shafts, the latter are not always perfectly true and means for straightening must be provided. Such work is expedited by fitting to an old lathe a pair of yokes with screws, as shown in Fig. 5. The yokes are adjustable longitudinally along the lathe bed ways and are hinged so that the upper halves can be rocked back when the armature is set on the lathe centers. When returned to the position shown, pins are inserted to hold the upper yoke halves in

place. Each yoke has a capstan screw and a grooved block is placed below the lower end of each screw to keep it from bearing directly on the shaft.

Under the shaft and near the points where screws bear, dial indicators are adjustably supported. The indicators are adjusted so that when the armature is turned by hand, they show how much the shaft runs out and the angular positions at which deflection is a maximum. With these noted, the operator knows where to set the shaft when one or both screws are tightened to effect straightening. Screws are then backed off and, if necessary, the process is repeated until the shaft runs perfectly true. Straightening is quickly done at low cost.

Some \$2 to \$3 per assembly is saved over former hand work in building up laminated pole piece stacks and riveting them together, by use of the fixture shown in Fig. 6. Laminations are stacked and weighed and end plates are applied, tubular rivets being put in place in holes already pierced. This group of parts is then set into the box fixture and its door is closed and locked with a hand nut. On top of the pile is placed a block having four buttons that rest on the upper ends of the four rivets. This block fits the recess above

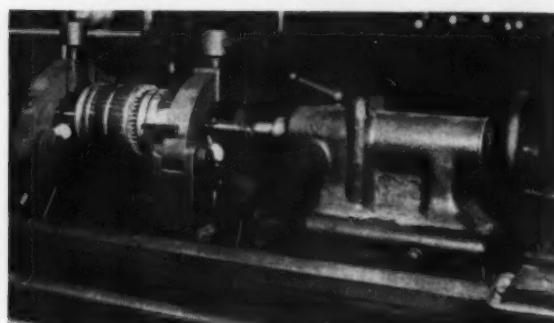


Fig. 5—Special setup built on old lathe for straightening motor armature shafts.



Fig. 6—Special fixture used with light hydraulic press to assemble motor armature laminations.

the laminations and so cannot move except vertically. Laminations are also positioned positively against transverse motion by the fixture. In the bottom of the fixtures are four buttons spaced on centers in line with the rivets.

Rivets are set or headed on both ends when the block is forced down by the ram of a light Hannifin hydraulic press in which the fixture is used. As the block moves down, it applies pressure to the laminations as well as to the end plates while the buttons roll over both ends of all four rivets, completing the assembly and fastening the laminations firmly together. There is no tendency for the laminations to cock, and as the end plates are stamped with rounded beads at each side, there is no tendency for insulation to be cut when wire is later wound on the core. The fixture thus insures a better as well as a faster job.

Flexure Tests On Copper

COPPER expansion joints are needed in concrete slabs and walls, masonry walls and other places where weather conditions require provision for alternate expansion and contraction. The expansion joint in the shape of an inverted "V" permits the necessary "play." Research was done to determine which kind of bend, and description and weight of metal, would best withstand the flexing caused by temperature changes.

Special apparatus was designed by the Research Dept. of Revere Copper and Brass, Inc., which, operating by electric motor, flexed the

bends at the rate of 6 cycles per min, so that within a few weeks it was possible to run as many as 40,000 flexures. Conclusions of this work are: (1) The greater the height of leg, the greater the number of flexures sustained before failing; (2) The greater the radius of bend at the crown, the greater the number sustained before failure; (3) Joints formed from copper of cold rolled temper usually sustained a slightly greater number of flexures before failure than those made from soft temper; (4) The thinner the gage of the copper, the greater the number of flexures sustained before failure.

DYE PENETRANT

Quickly Reveals Surface Flaws

New dye penetrant inspection technique developed by Northrop Aircraft detects minute surface flaws quickly and accurately. Use of this method avoids expensive finish machining operations on parts that will later be scrapped.

By **ALEXANDER GILBERT**
Manager, Research & Development Dept., Dy-Chek Co., Hawthorne, Calif.

NORTHROP power plant engineers engaged in the design and manufacturing of high-powered gas turbine engines had a need for a quick, accurate method of surface inspection to detect small cracks in gas turbine blades. It was important to detect these material failures before they grew large enough to be dangerous. Conventional methods of inspection were used on all parts before assembly. Highly stressed parts had to pass X-ray, ultrasonic, magnetic or fluorescent penetrant inspection.

However, what was needed most was a method of inspecting units on the test stand between runs. There was no way of knowing quickly whether a mark on a turbine blade was a scratch, a stain or a crack. The expense and time involved to change or replace each suspected part would be prohibitive. Yet, the fact remained that it might be dangerous to leave it in the power plant.

Much research and testing resulted in the development of a new general purpose method of detecting surface cracks and discontinuities. It is a dye penetrant method of inspection and is now being marketed by Dy-Chek Co., a division of Northrop Aircraft, Inc. This new method is simplicity itself. No special equipment is necessary. No electricity or special lights are required.

Inspection is completed in three easy steps with special compounds. After cleaning the part, the first step is to apply the penetrant. The second step is to wash off the excess penetrant. The

third step is to apply the developer. The theory behind the Dy-Chek system is that some liquids will penetrate into minute cracks in metals. The special Dy-Chek penetrant compound is a liquid having exceedingly high capillarity and low surface tension in which is dissolved a brilliant red dye. This liquid having nil viscosity will penetrate into even the finest surface discontinuities and will remain there while the excess is removed from the surface.

It may be applied by spraying or dipping or by simply brushing on the surface. The excess dye is removed from the surface with a special cleaner by brushing, dipping or spraying. The developer is applied in the same manner. The Dy-Chek developer consists of fine white solids suspended in a quick drying liquid. It has two functions: (1) It provides a smooth white background to give good contrast for any indication; and (2) it draws the dye penetrant from the flaws. Indications of surface cracks and discontinuities show up as vivid red marks on a white surface. It is possible to estimate the size of the crack by the amount of bleeding or spread of the red dye. A crack is indicated by a red line or a series of connected red dots. An example of this appears in Fig. 1. Scattered disconnected dots indicate porosity.

Because surface flaws stand out so vividly, Dy-Chek inspection is especially valuable where defects are obscured by sharp change of contour

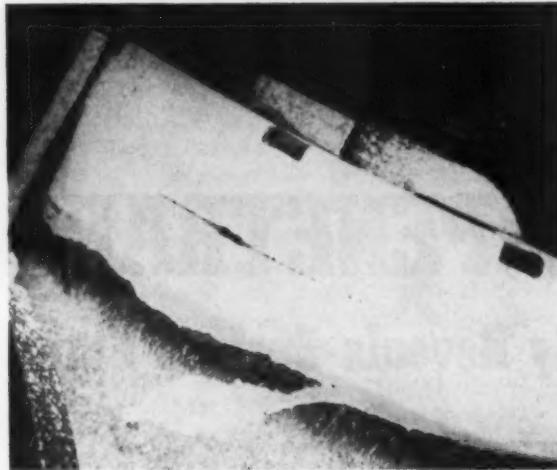


FIG. 1—Dy-Chek indications sometimes occur in the form of a thin line of red dots. This type of indication reveals the presence of an extremely fine crack. This is a photo, magnified several times, of a portion of an aircraft propeller hub.

and sharp radii. Only flaws that consist of actual surface discontinuities can be found with this method. Internal flaws or porosity cannot be determined by this method unless the cavity extends to the surface. This method lends itself readily to the inspection of any type of fabrication. In the inspection of welds, it can be used to check for crater cracks and lack of fusion or porosity. It has been used successfully on carbon steel, stainless steel, anodized and bare, aluminum, Inconel, magnesium, copper, brass and hard facing alloys.

The Dy-Chek method extends the field of visual inspection making even the most minute surface cracks easily visible, thus saving the time-consuming job of close examination with a magnifying glass.

Because it is primarily a method devised for the detection of surface discontinuities, it should

CYLINDER CASTING CRACKS are quickly discovered during processing by this rapid surface inspection method. Catching defective castings at this time avoids expensive machining operations on parts that will later be scrapped.

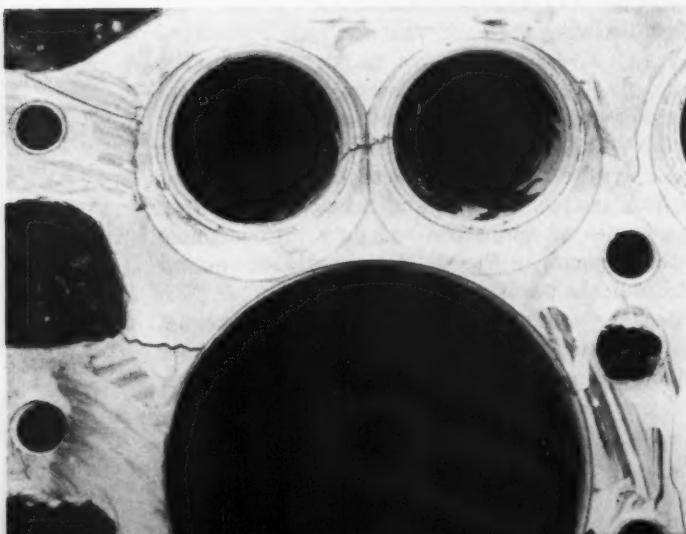


FIG. 2—Dy-Chek inspection at the Byron Jackson receiving dock revealed a defect, arrow, in the casing of this centrifugal pump.

not be considered as an inspection method for finding sub-surface flaws and nonmetallic inclusions. Nor can this method be used for determining metallic structure. In short, the Dy-Chek method should be used only to find *surface cracks*.

The finding of flaws in raw stock, castings and forgings prior to starting machining operations is as imperative as continual inspection for metal soundness between machining operations. Basic metal can be proved out by destructive tests on test bars from each heat and pour. However, parts in production must be inspected by some means of nondestructive testing.

Saves Costly Machining

In the manufacture of high performance Byron Jackson centrifugal pumps, the pump case castings are now inspected on the receiving dock by means of a small portable Dy-Chek kit. A typical rejected casting is shown in Fig. 2. Previously, these castings were processed in the machine shop where all flanges and mating surfaces were machined. Then the castings were removed to the test section to undergo hydrostatic tests. Faulty castings formerly showed up after much costly machining had been done.

Prior to using Dy-Chek, a manufacturer of welded stainless steel pressure vessels would complete the entire fabrication, then move the assembly out to the test section. Only then would defective parts be caught. The discovery of these faulty weldments incurred the time and expense of moving the parts back into the weld shop to repair the faulty welds. Now this manufacturer inspects the welded segments in the jigs as each section is completed. Faulty welds are found immediately and corrective measures are taken without removing the part from the jig.



FIG. 1—Rocking fixture in loading position.

Rocking Fixture Simplifies Drilling Operation



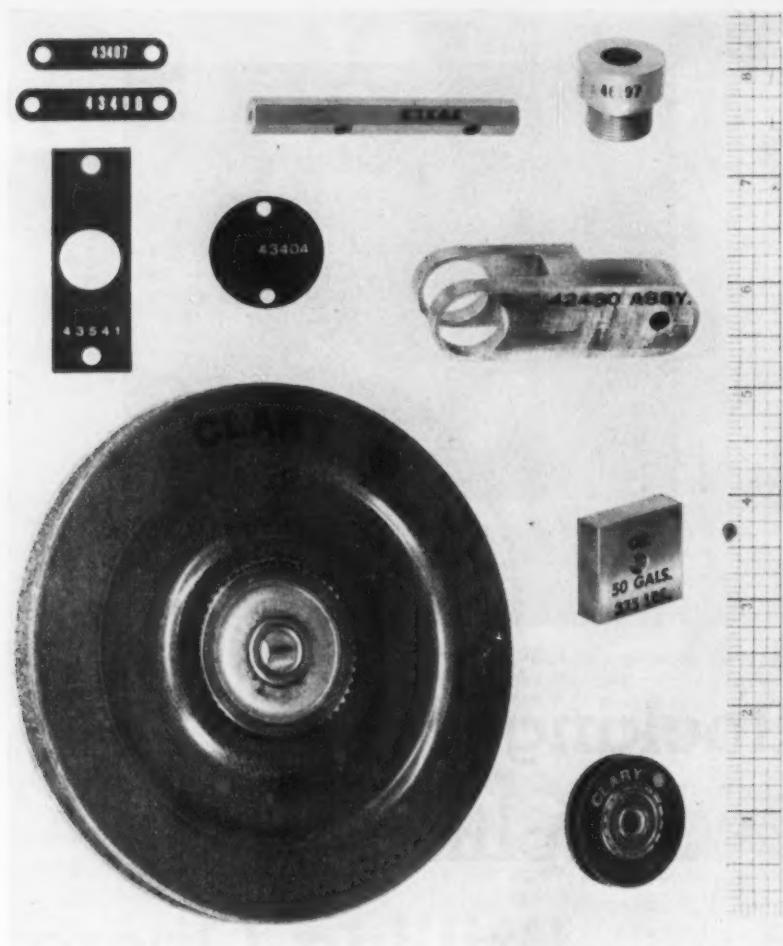
FIG. 2—Air cylinders push fixture toward position under drills, as gear on fixture meshes with stationary rack and turns fixture 90°, brings face to be drilled into position.

DRILLING operations on geared transmission housings built by Clark Equipment Co. are facilitated by use of a rocking fixture. Mounted on trunnions, the fixture can be rocked 90° from the loading to the drilling position by means of a rack and pinion arrangement.

Through use of the fixture, the operator does not have to reach or push the casting underneath the drills, and pull it out again after drilling.

With the fixture in the position shown in Fig. 1, the casting is laid on the horizontal face and clamped against the vertical face. After clamping, the operator pushes a button to start the cycle, and is then free to operate some other machine. The first event of the automatic cycle is the pulling of the whole fixture under the drills by an air cylinder. This motion rotates a pinion meshing in a fixed rack. The gear, being attached to the fixture's stub shaft, rocks the fixture 90° and brings the face to be drilled into a horizontal position, as shown in the top photograph.

Drills then lower and feed automatically. After drilling, they retract, and the air cylinder operates in the opposite direction to push and rotate the fixture to the loading-unloading position. The machine stops automatically, waiting for unloading, loading of a new housing, and pushing a button to start the next cycle.



MACHINE MARKED PARTS: These are typical parts that have been "rubber stamp" marked by machine in black, white, and colored inks. Machine marking has proven more accurate, economical, and speedy than hand methods.

Mechanized Marking of Parts Costs Less

By
JAMES M. PHILLIPS
 The Bell Press, Los Angeles

A method of "rubber stamp" marking small aircraft and electronic parts by machine has been developed by a West Coast printing firm. Jigs, rubber dies, and stamping presses do a faster job, more economically, with fewer rejects than was formerly done by hand methods.

THE Bell Press of Los Angeles has developed a machine method of "rubber stamp" marking metal and phenolic parts. This method was designed to replace hand rubber stamping. It is currently being used on the West Coast by government contractors and sub-contractors, and

by manufacturers and suppliers of aircraft and electronic products.

Government specifications, in many cases, call for parts and small assemblies to be marked "with ink, from rubber type." The only method of meeting those specifications was to hand-

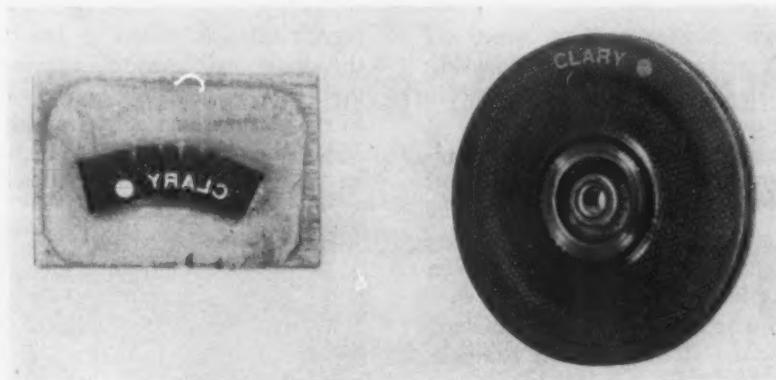
stamp each part. This has been unsatisfactory since it is a slow and costly process. In addition, the poor quality of work caused a high percentage of rejects.

Machine rubber stamping involves jigs, rubber dies, and stamping presses. All work is done by the Bell Press in their plant. Parts to be marked are shipped to them and returned after marking. All work is done to manufacturer's specifications.

A typical order consists of a shipment of parts

lems that would be encountered have been successfully solved. The quality of work done has proved to be far superior to hand stamping and has cost less.

So far, no limitations as to size, shape, surface, weight, placement, or degree of curve of either part or marking have been encountered. Parts have been marked that were variously thick and thin, odd-shaped and symmetrical, flat and curved. Materials marked were bare metal,



RUBBER MARKING DIE: A rubber marking die and the part it is used on are shown in this photo.

to be marked accompanied by the purchase order and print. The print specifies the size and style of lettering, placement of the marking on the part, the color of ink, and the type of lacquer to be used. Nearly all parts marked are sprayed with lacquer after marking.

A composition rubber die and a jig are made for each order. The stamping is done on a special press. After stamping, the parts are sprayed with specified lacquers, Glyptol, Tuf-On, or others, and shipped back to the customer.

In the six months that Bell has been doing this work, most of the types of work and prob-

phenolics, anodized parts and others finished in ebanol. Markings have been made with black, white, and colored inks.

Special inks were developed to withstand processing after marking and using conditions. After marking, one particular order of phenolic pulleys was immersed in a solvent, then hot mineral oil, then regreased with a solvent-containing grease. An ink developed by Bell was resistant to all of these conditions. Also, special methods and handling equipment have been developed to accommodate the great range of sizes and shapes of parts handled.

New Books

"1950 Directory of Federal Purchasing Agents." Although heroic efforts have been made in recent years to centralize government buying, there are still more than 60 different procurement offices within the federal establishment. The new directory indexes about 6000 items purchased regularly by the various departments and bureaus, and carries a master index indicating the permanent address of each procurement officer. The Statesman Press, National Press Building, Washington 4, D. C. \$2.00. 112 p.

"Metallurgical Applications of the Electron Microscope." The book is a monograph containing 13 papers presented at a symposium held at the Royal Institution, London, and the discussion on them. Papers were contributed not only by the leading British workers in the field, but also by American, French and German scientists, so that the monograph gives a comprehensive and up-to-date account of the use of the electron microscope in metallurgy. The Institute of Metals, 4 Grosvenor Gardens, London, S. W. 1. \$2.50. 164 p.

Chilean Mill

USES NOVEL BLOOM SHEAR

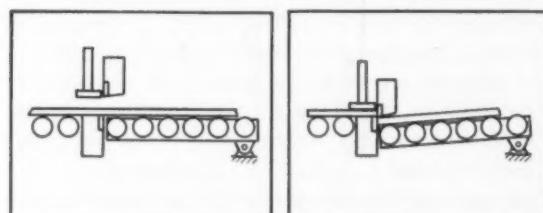
THE new integrated steel mill of Acero del Pacifico near Concepcion, Chile, is operating a down-cut bloom shear of unique design, incorporating features never before used.

The shear has an hydraulically-operated hold-down gag which automatically adjusts both itself and the stroke of the depressing table to the thickness of the slab. Advantages are a clean square cut and reduction of maintenance costs on both the depressing and shear approach tables.

The mechanism eliminates certain disadvantages of conventional slab shears. For example, the depressing table of the standard down-cut slab shear is usually operated by separate drive, or is connected to the moving ram. Under these conditions, the depressing table must drop a sufficient amount to handle the thickest slab for which the shear is designed. When a smaller bloom is cut, the cut piece must drop onto the depressing table through a space equivalent to the difference between its thickness and the maximum thickness. Each time a bloom of less than capacity size is cut, the depressing table receives the shock of the falling slab. These repeated shocks make necessary considerable maintenance on these tables. By automatically adjusting the depressing table to just the proper distance to receive the cut piece without a fall, the new shear eliminates shock to the depressing table.

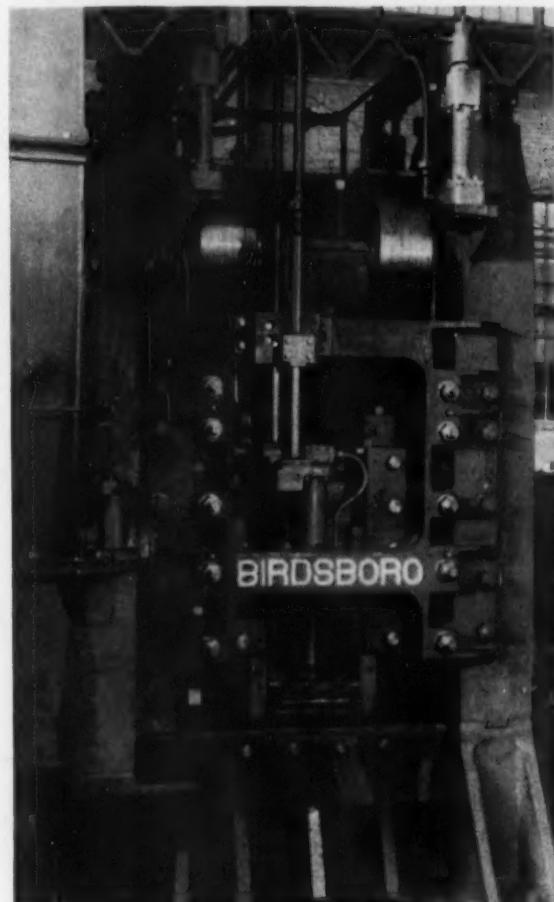
Shearing Shock Is Reduced

Since the hold-down gag on the standard shear is usually mounted in a fixed manner on the top knife slide, it must be manually adjusted for each slab thickness. If the gag is set too high, it is ineffective. If left too low, when thickness is increased, it may be wrecked. Therefore, it is often retracted and not used. Unless proper adjustment of the hold-down gag is made, as the bar becomes shorter, the end lying on the an-



DEPRESSING TABLE of bloom shear automatically adjusts, along with hold-down gag, to the thickness of the slab being cut.

proach table is raised by the cutting action. It then falls back onto the approach table, subjecting this table to considerable punishment. Further, the same action which causes the back end of the piece to be lifted in the air, also causes an "S" curve to be put in it before it is actually

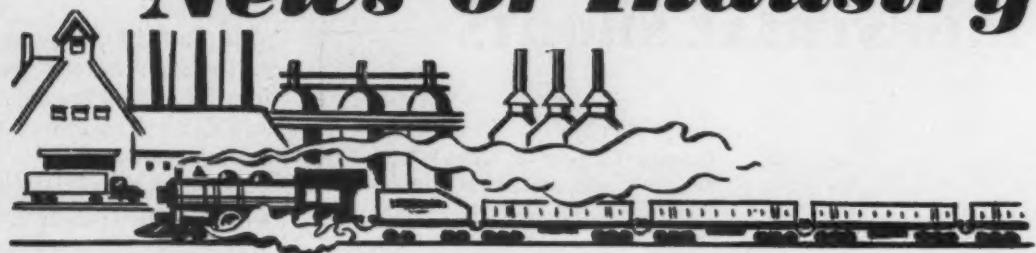


HYDRAULIC GAG arrangement shows in this view of the unique bloom shear.

parted, leaving bent ends on the sheared slabs. And, since the piece is not perpendicular to the knife, the cut is oblique instead of vertical.

By the automatic operation of the hold-down gag on the new shear, this trouble is also overcome. As the shear cuts, the gag holds the uncut slab firmly in position on the bottom knife anvil. The gag exerts substantial pressure, and prevents turn down of the sheared end and lifting of the unsheared slab. The shear was made by Birdsboro Foundry and Machine Co.

News of Industry



Mutual Priority

Washington—Priority ratings for defense orders issued in the United States and Canada will henceforth have equal standing in either country.

This was made official last week by issuance of NPA Reg. 3 which extends ratings to Canadian firms producing American defense orders. National Production Authority said Canada had guaranteed the same priority assistance to this nation.

The arrangement was worked out by the two nations as part of the mutual economic and defense assistance agreement in order to speed up North American defense.

Report New Mill Ready in July

Pittsburgh—Pittsburgh Steel Co.'s new high lift blooming-slabbing mill is scheduled to be in production next July, according to a recent announcement. The mill, to cost \$6 million, will be financed half through earnings and half through a bank loan.

Executives Expect Higher Prices

New York—Eight of every 10 business men interviewed by Dun & Bradstreet last month in a survey of business expectations anticipated that their selling prices in the first quarter of 1951 would top those in the first quarter of '50.

Ohio No. 6 Furnace Blown In

Pittsburgh—Ohio blast furnace No. 6, Carnegie-Illinois Steel Corp., was blown in Nov. 9 after being out for relining since Apr. 1.

Huge Tinplate Expansion Program Spurred

Jones & Laughlin plans 60 pct expansion of production . . .

Pittsburgh District will retain producing edge over rest of nation . . . Other mills plan expansion—John Delaney.

Pittsburgh—Jones & Laughlin Steel Corp.'s decision to expand its tinplate production by approximately 60 pct means that the Pittsburgh District will retain its decided edge in capacity despite contemplated expansion in other sections of the country.

J. & L. which now produces approximately 325,000 tons of tin mill products per year, plans to install a high-speed halogen type electrolytic line, a two-stand temper mill, an electro cleaning line, and additional annealing and coil preparation equipment at the Aliquippa Plant, where the company now has two electrolytic lines in operation. The program will be completed late next year.

Will Boost Standing

With this new capacity, J. & L. will be producing about 9 pct of the country's tin mill products, compared to its present share of roughly 6.5 pct. Furthermore, it will strengthen the company's standing as the nation's fourth largest producer of tinplate.

J. & L.'s tinplate expansion is in line with announced plans to install six 250-ton openhearth furnaces with an annual capacity of 1 million tons at its Pittsburgh Works—a project that will begin to bear fruit in late 1951 and early 1952. It would not be surprising if the company builds five additional furnaces at Pittsburgh. It has room for them.

Geographically, tinplate capacity based on total production of approximately 109 million base boxes this year is distributed approximately 48 pct Pittsburgh district; 24.6 pct East and Southeast; 22.9 pct West Central and 4.5 pct West Coast.

Contemplated increases scheduled for completion during 1951 based on total production of approximately 122 million base boxes will change the picture approximately as follows: 44.9 pct Pittsburgh district; 24.6 pct East and Southeast; 23.9 pct West Central, and 6.6 pct West Coast.

These figures will later be modified by the new capacity of Kaiser Steel Corp. at Fontana, and U. S. Steel Corp.'s new mill at Morrisville. However, this capacity will not be in production until 1952.

Other Expansions Planned

Besides J. & L., companies that have announced plans to expand capacity or to build new capacity include Kaiser Steel Corp., a 200,000-ton per year mill at Fontana; Columbia Steel Co., a new electrolytic line at Pittsburgh, where cold-reduced sheet and tinplate facilities will be expanded by 215,000 tons per year; Bethlehem Steel Co., expansion of electrolytic facilities at Sparrows Point; Wheeling Steel Corp., a new electrolytic line at Yorkville, O.

In addition, U. S. Steel Corp.'s new Fairless Mill will include tin-

INDUSTRIAL SHORTS

TAKES OVER — GRAHAM-PAIGE CORP. has taken over from the Whitney-Apollo Steel Co. sheet mills at Apollo, Pa. and Portsmouth, Ohio. The Apollo mill is operated under lease from M. N. Solomon Co., Pittsburgh.

EXPANDING PLANT — Work has begun on a 30,000 sq ft addition to the foundry of the Charles City, Iowa plant of the OLIVER CORP. The project will increase potential gray iron molding capacity by approximately one third. The new facilities are scheduled to enter production next June.

BRANCH WAREHOUSE — A new \$100,000 branch warehouse in Detroit has been completed by the COLUMBIA TOOL STEEL CO., Chicago Heights, Ill. S. E. Sjogren, vice-president of the company, is in charge.

ALUMINUM FOUNDRY — A new aluminum precision molding foundry, which consolidates activities previously carried on at two different locations, has been put into operation by MORRIS BEAN & CO., Yellow Springs, Ohio. It was designed and constructed by the H. K. Ferguson Co. at a cost of approximately \$600,000.

LEAVING POST — Raymond L. Collier has announced his resignation as executive vice-president of the GRAY IRON FOUNDERS' SOCIETY, INC., a post he occupied for the past 4 years. Mr. Collier plans to re-enter the trade association field, with which he has been identified for more than 25 years.

ADDS TO LINE — METAL & THERMIT CORP., New York, is now producing tin and tin alloy anodes for use in the electroplating of tin and for the new tin-zinc plating process. Three types are available: pure tin anodes, high speed alloy tin anodes and tin-zinc anodes.

ACQUISITION — Frank E. Gaines, founder of Aerol Co., Inc., now a Lockheed subsidiary, has purchased the GEM WARE MFG. CO., Los Angeles, manufacturers of cooking ware and magnesium and aluminum castings. The firm will operate as the Gaines Co., but will retain the Gem Ware trademarks on cooking ware and other consumer goods.

MORE WIRE — WIRE, INC., Chicago, has acquired a building in Morton Grove, Chicago suburb, in which it plans to produce a line of stainless steel wire products. The building contains approximately 12,500 sq ft.

GROWING — ELKAY MFG. CO., Cicero, Ill., manufacturer of stainless steel sheet products, has acquired an additional plant at 4703 W. Arthington St. in Chicago.

PEI OFFICERS — R. A. Dadisman director of marketing, Armeo Steel Corp., Middletown, Ohio, was elected president of the PORCELAIN ENAMEL INSTITUTE. New vice-presidents are Harold H. Wineburgh, Textile, Inc., Dallas; and E. M. Hommel, O. Hommel Co., Pittsburgh.

TOOL AGENT — The Cleco Div. of the Reed Roller Bit Co., Houston, appointed GRANITE CITY TOOL CO., St. Cloud, Minn., as distributors of Cleco pneumatic tools and they will also maintain complete stocks of Cleco parts and accessories.

BRAZILIAN MILLS — New mills for making rolled steel are planned for Sao Paulo by the COMPANHIA PAULISTA DE LAMINACAO, S. A. with operations to begin in March or April 1951. The company expects to make around 1500 tons a month of special rolled-steel shapes. It has an initial capital of about \$540,000.

plate facilities, although this capacity could not be completed before 1952 since ground for the new mill will not be broken before next spring.

It is understood this mill also will include a twin of J. & L.'s high-speed five-stand tandem mill at Aliquippa, world's fastest mill, which can cold-reduce strip steel at the rate of 60 mph. It has been operated as fast as 70 mph.

U. S. Steel chose the same type mill as J. & L.'s because it is a proven mill, and blueprints are available, which means a considerable savings in time and no risk of an unproven product.

B&W's Harter Describes New Continuous Casting Development

Asks New England Industry to consider new steelmaking method.

BOSTON, MASS. — Continuous casting of steel has now reached a point where it is possible to cast oval cross sections of 25 to 40 sq in., revealed Isaac Harter, chairman of the board of Babcock & Wilcox Tube Co., partners with Republic Steel Corp. in research.

Mr. Harter said that this size lends itself well to rolling into small bars, narrow width strip steel, rounds for wire products, and other items. He continued that a new mold will be tested this year which would make possible production of a casting with a cross section of 100 sq in.—a mold built for further enlargement.

Proof During 1952

In predicting that during 1952 "continuous casting will have proved itself a low-capital and high yield" steelmaking process, Mr. Harter advised New England industry in a letter to the American Academy of Arts and Sciences to consider the new steelmaking method. (THE IRON AGE, Aug. 19, 1948.)

In continuous casting, molten steel becomes a semifinished shape for rolling or further processing, eliminating expensive heavy machinery: ingot equipment, soaking pits, and blooming mills. Research

by the two companies began 2 years ago at the B&W works in Beaver Falls, Pa.

Mr. Harter estimated that continuous casting could now be applied to about 15 pct of U. S. output and that pending improvements could boost application to between 25 and 30 pct. Some regard the method as the hope of the steel industry in eventually lowering costs, investment, and manhours and make possible de-

centralized lower-cost mills to make moderate quantities of steel.

New England must decide on either an integrated or non-integrated mill, considering the lower investment of the non-integrated mill, the ore situation, and whether or not the availability of scrap iron is reasonably in balance with local demand, he said. The mill employing continuous casting will rely on local scrap because of its moderate production.

its board of directors last September when they resolved: "That if it is the settled policy of the U. S. Government to assist expansion of steel capacity to meet defense needs by financing or building such capacity and to turn it back to private ownership, the New England Steel Development Corp. lend aid and assistance to the government . . . by making available to the government or its agencies its studies of the market for a New England steel mill . . ."

They also endorsed F. H. McGraw and Co. "as a firm suitable to undertake . . . design construction and management" of the plant.

There are two types of plans for government help. Under one plan the New England Steel Corp. would acquire the site and the government would build the plant under provisions of Section 301 (e) and Section 302 of the Defense Production Act of 1950. When the mill was available for peacetime output the New England Steel Corp. would buy or lease the facilities from the government.

One Plan Favored

But the favored plan calls for the New England Steel Corp. to acquire land and raise about \$30 million of working capital by public sale of securities. (This amount is already pledged.) It would then contract for a government loan for capital construction funds as provided by the Defense Production Act.

Several months ago the New England group engaged the firm of Coverdale & Colpitts, New York, to make a detailed and comprehensive market survey. Their report is expected to be completed within a week or two.

Haste born of expediency forced the timetable to be accelerated instead of waiting for their report—which if favorable will be the clincher.

Production Steel Builds Plant

Chicago—Construction of a new plant containing 48,000 sq ft of floor area in Broadview, a Chicago suburb, has been started by Production Steel Co.



"Like I said before, these steps are treacherous. Better watch your step."

New England Mill Group to Ask U. S. Funds

Mill will probably be built in 4 years with U. S. financing . . . Mill fits into Administration's campaign for steel expansion . . . NSRB boss gives the green light—By Bill Packard.

Boston — An integrated steel mill for New England will probably be built within the next 4 years with the aid of government funds. The New England Steel Development Corp. has decided to request government financing of its long proposed mill at New London, Conn.

Decision to seek public rather than private financing for the \$250 million to \$300 million plant is based on the drive by the Administration to obtain more steel expansion. President Truman and National Security Resources Board Chairman Symington have been in the forefront of Administration spokesmen calling for government-financed or government-built steel capacity.

Symington Gives Green Light

Authority already delegated to Mr. Symington places him in the driver's seat in determining where government-financed capacity would be built. He also has the power to decide the who, when, and where of 5-year amortization.

Representatives of the New England group conferred with Mr. Symington several months ago. It was learned then he had "given the green light" on the mill plan.

Recently officials of the New England Steel Development Corp. have discussed the matter more

Warehouses Get Steel Share After Priorities

NPA orders mills to allot warehouses and small industry proportionate share of steel . . . Based on 9 month shipment period in '50 . . . Share will be much under 20 pct. of total.

Washington—The National Production Authority moved last week to assure warehouses a share of steel over and above the amounts required for rated orders and special defense programs.

Under NPA Order M-6, steel producers are required to allot warehouse customers proportionate percentages of each steel product, based on average monthly shipments during the first 9 months of 1950.

These allotments will be made out of the steel available after the mills have met defense and other essential requirements.

Shipment Share Sinks

During the first 9 months of this year warehouses received nearly 20 pct of steel shipments. A 20 pct share of steel shipments would be very nice, but the hitch is that they will get their 20 pct after defense and essential civilian priorities have been met. Thus, their share of total steel shipments will actually be much less than 20 pct.

They will be especially hard hit on vital flat-rolled products. By June of next year defense and essential civilian priorities will be taking about 50 pct of flat-rolled steel output. This means that warehouses will receive their proportionate share of the remaining 50 pct. Since they have been receiving only about 11 pct of flat-rolled production, by June they will be getting only about 6 pct of total flat-rolled output (plus replacement of their stock going to rated programs). Of course they will get a bigger share of some other products.

Administrator Harrison said this step had been taken after consultation with Economic Stabilization Administrator Valentine. In addition to providing a flow of steel to small users, it was hoped that the order would help the government hold the line against inflation.

It provides that while the producer must accept orders up to the limit of the pro-rated allotment,

he does not have to take orders which are not for "substantially the same products," that is, which vary by other than minor differences in size and design.

Customer Ceilings Set

Since the purpose of the order is primarily to assure steel for small users, it also set ceilings on the amounts of steel which warehouses must accept from one customer at a time. These are—any item of:

Carbon steel more than 8000 lb;
Alloy steel (except stainless) more than 5000 lb;

Stainless steel sheet more than 2000 lb;

Stainless bars and plates more than 1000 lb; and

Stainless tubing or pipe more than 1000 lb or feet, whichever is less.

And in no case is a distributor required to make deliveries which aggregate 40,000 lb or more at any one time unless the delivery includes 10 or more different items with no item exceeding the foregoing weight limits.

Forbids DO Extension

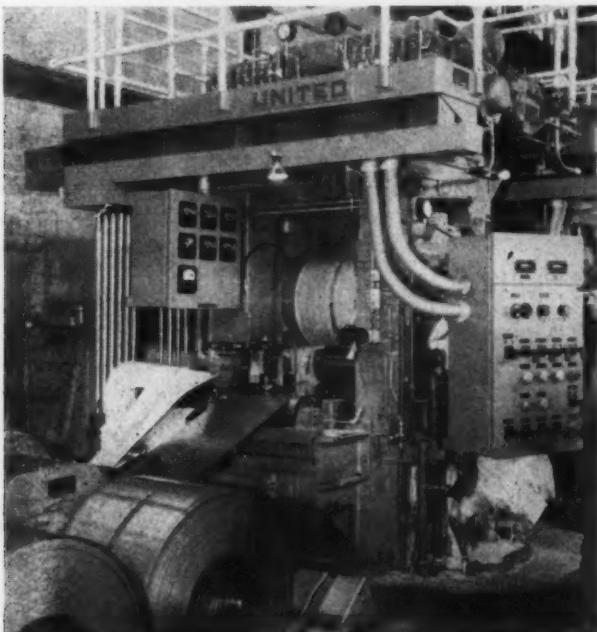
Also, the order prohibits the extension of a DO rating to obtain industrial or merchant trade steel products for sale or resale in the same form in which it is received except when such products are to replace items shipped from stock on DO orders. Products covered by this provision are:

Industrial—blooms, billets, slabs, tube rounds, tile blocks, sheet, and tin bars; structural shapes and piling; plates, including skelp; rails and track accessories; hot rolled bars (except reinforcing); concrete reinforcing bars; cold finished bars; hot-rolled and cold reduced sheet and strip; black, tin and terne plate; welded and seamless tubing; tool steel; and wire rope and strand.

Merchant trade steel (carbon and low alloy only)—Standard and line pipe and water well tubing and couplings; oil country casing, tubing, drill pipe and couplings; galvanized, lead coated, or painted sheet and strip, formed roofing and siding, ridge roll and flashings; nails, fence and netting staples; drawn wire; bale ties; wire and wire fence; wire netting; fence posts; and welded wire concrete reinforcing mesh.

New Thomas Steel Strip Mill Can Roll 120,000 Tons Per Year

Warren, Ohio—A new high-speed tandem cold reduction mill rated at 120,000 annual tons was recently put in operation by Thomas Steel Co. E. Milton Barber, president, said the mill re-



ROLLING ALONG:
Recently installed, this United Engineering and Foundry Co. high-speed cold reduction mill has an annual capacity of 120,000 tons at the Thomas Steel Co., Warren, Ohio. The mill has a top delivery speed of 2000 ft of cold-rolled strip per minute.

places equipment made obsolete by the present huge demand and will increase the range of the company's cold-rolled strip sizes.

The 10x26x24 in. 4-high 3-stand tandem cold reduction mill has a top delivery speed of 2000 fpm. Its main motor-generator set produces 3250 hp, supplying 800 hp each to

the first and second stands and 1000 hp to the third stand, with 400 hp powering the take-up reel. Equipment includes magnetic thickness gages and tensiometers.

All parts were designed and made by United Engineering and Foundry Co. Installation was made by F. H. McGraw Co.

looking for business, some integrated producers had curtailed operations and producers' and consumers' stocks were substantial.

With the war demand for castings spurred, stocks were gobbled up. Producers are now doing out current production.

To keep all foundries going, producers feel that some foundries could help themselves by using more scrap in their melt, but foundries are reluctant for at least two reasons—cost and quality.

Net result could be one of two things—an increase in merchant iron production, or less civilian work for the foundries. However, steel plant expansion programs thus far announced do not contemplate expansion of pig iron production and the furnaces built during the war and since were steel plant furnaces.

Belatedly Follows Steel

On the other hand, some tonnage available to foundries during the war and immediately after has been lost through dismantling of marginal furnaces. On the negative side is the fact that since 1948 merchant iron demand has lagged behind steel.

But now merchant iron has belatedly followed the steel demand

Foundries Put Heat on Merchant Iron Market

Foundry backlogs tower . . . Inventories low and defense work on way . . . Foundries still work but on car-to-cupola basis . . . Cast scrap up . . . Foreign pig returns—By Bill Lloyd.

Cleveland—A car of merchant pig iron was a pearl of great price this week as foundry demand, based on a terrific melt, threatened to turn a tight but orderly merchant iron market into a hysterical scramble for tonnage.

Foundry backlogs are big and with a possible large volume of defense business in the offing, producer and consumer inventories are low. Producers have been allocating tonnage among regular customers for the past 3 months, and are unable to take on new customers except those with DO's.

Foundries Still Working

So far, there have been no reports of foundries being forced to curtail production because of a lack of merchant iron, but a number of foundries are operating on a car-to-cupola basis.

Subsidiary effects of the shortage include a substantial advance in the price of No. 1 machinery cast scrap in the Middle West. Current quotations range from \$55 to \$65 per gross ton.

Another effect is the re-entry of foreign pig iron into the market. Current prices range from \$57 to \$59.50, Atlantic seaboard. This iron is priced largely on the basis of supply and demand. It usually turns up when foundries can't get additional tonnage from regular sources and the cost of using more scrap in the melt is prohibitive. Price of foreign tonnage 3 months ago was \$41, but today French pig

is being quoted at \$59.50. Belgian iron was withdrawn from the market a few days ago—usually a sign of a price increase.

Market Opinion Conflicts

While some producers foresee a leveling off in demand in the first quarter because credit regulations are expected to affect sale of automobiles, farm implements and housing, other producers fear that a serious impasse in merchant pig could develop.

Within the past 5 months, the merchant iron business has undergone a complete reversal. In July, producers were on their knees

A LOT OF BELT: Reportedly the largest conveyor belt ever built and shipped in a single roll was made in the new plant of B. F. Goodrich Co., Akron, Ohio. It weighs 45,000 lb, is 48 in. wide. The roll stands 15 ft tall. It will carry ore from ship to shore at the Baltimore & Ohio Railroad's new Baltimore, Md., dock.



pattern and foundries are after tonnage. Some producers say that most foundries are getting more iron today than they ever did.

Proponents of new capacity point out that, in addition to enabling the industry to service periods of peak demands like the

present, new furnaces would provide a possible brake on cast scrap prices as well.

With production fixed and demand flexible, the big question is, will the merchant iron business stand new capacity in terms of cost and time required?

for 1951 are expected to require up to 30 pct of total production instead of 10 to 15 pct which has been going to military needs.

One serious industry objection is that such a sudden cutback will let skilled workers drift out of the aluminum fabricating industry. When defense production starts rolling, the industry will sorely need these men.

Both fabricators and primary aluminum producers were howling for NPA to create an industry advisory committee before taking such drastic action.

Peak Rate Production

The aluminum industry reports that it is producing at the highest rate since mid-1944. Production in the third quarter totaled 371,945,743 lb, but there still was not enough aluminum for civilian use after military requirements.

Idle capacity in the U. S. now totals 160 million lb per year. It could only be operated with high cost power requiring a premium of about 6¢ per lb. Aluminum Co. of America. This Alcoa capacity is being reactivated but details had not been worked out at press time.

The Canadian offer of metal for U. S. stockpiling has been allowed to expire. NPA Administrator Harrison declared that the government is now negotiating for Canadian aluminum.

Expansion in 3-3-3-1 Ratio

Washington also wants an expansion of 1 billion lb or more in this industry. At first, it was proposed that the individual producers share the expansion in ratio of their current capacities but, with Alcoa already being sniped at as a monopoly, this was revised. The latest plan is for Alcoa, Kaiser Aluminum & Chemical Co., and Reynolds Metals Co. each to take 30 pct of this expansion, and for the remaining 10 pct to be split between Harvey Machine Co. and Apex Smelting Co.

Neigel Bell has been appointed consultant to NPA and is setting up the Light Metals Division. He is vice-president and general manager of Sterling Windows, Inc., New York.

NPA Issues 35 pct Aluminum Cutback Order

Changes made following industry protests . . . Industry still protests . . . Claim economy will be hurt more than necessary and skilled workers will be lost—By Bob Hatschek.

New York—The much-revised aluminum cutback order was finally issued on Monday by the National Production Authority. In its final form it calls for a reduction of 35 pct of civilian use of the metal, effective Jan. 1, 1951.

This means that fabricators will be permitted to use aluminum at a rate of 65 pct of their average consumption for the first half of 1950. The original base period (July 1, 1949, to June 31, 1950) was strenuously attacked on the grounds that it did not show a true picture of normal consumption.

Users' receipts of aluminum were down to about 80 pct of normal during the first few months of that period.

Some producers would have been cut as much as 50 pct and a great many would have been cut to a point where they could not have operated on an economic basis. This was the reason for the change in base period.

It was originally stated that 200 million lb of aluminum were to be stockpiled during the first 6 months of 1951. But NPA administrator Harrison now claims that authorized defense requirements

Aluminum Cut Back to 65 Pct

Washington—Use of aluminum for manufacture of non-defense goods has been cut back to 65 pct of the average quarterly consumption during the first 6 months of 1950, under NPA order M-7 issued Monday.

Although the order does not become effective until Jan. 1, a further provision restricts December use for civilian production to 100 pct of the monthly average for the base period.

The order also imposes inventory restrictions, limiting such stocks to a 60-day supply or a practical working minimum, whichever is less.

Small businesses using less than 1000 lb a year are exempt from the order. Also, pending development of power requirements, the order does not apply to contracts placed prior to the order for delivery before April of aluminum conductor cable, wire or bus bar for production or transmission of electricity.

It was emphasized that the order applies to users of aluminum products and forms and does not limit production or conversion, or in the production of other metals and alloys. Products and forms covered by the order are as follows:

Rod and bar, wire under $\frac{1}{8}$ in., electric transmission cable, rivets, forgings and pressings, impact extrusions, castings, rolled structural shapes, extruded shapes, sheet, strip, plate, slugs, foil, tubing and tube blooms, powder, ingot, pig, billets, slabs, and purchased scrap.

Can Control Brittleness From Sulphur in Steelmaking Process

Birmingham, Ala.—Brittleness caused from sulphur in steel can be controlled in the steelmaking process. Thus falling supplies of first-grade coking coal won't mean diminishing output of high-grade steel, said Dr. James R. Killian, Jr., president of the Massachusetts Institute of Technology last week.

The fundamental chemistry of sulphur in steel furnaces has been established by MIT research sponsored first by Republic Steel Corp. and later also by the American Iron and Steel Institute, he said. Lower grades of coke with more sulphur may now be used for the highest grades of steel.

Speaking under the auspices of MIT's National Committee on Financing Development, a program seeking \$20 million for added educational and research facilities, Dr. Killian said that \$16 million had already been obtained.

Volta Redonda Output Tops 1949

Rio de Janeiro—Brazil's Volta Redonda steel mill produced 108,351 tons of steel, 171,648 tons of pig iron, and 141,715 tons of rolled steel in the 1950 January-June period. Steel production topped output in the corresponding period in 1949 by 67,680 tons. Pig iron was up 84,897 tons and rolled steel, 37,350.

Electrification of the railroad span between Volta Redonda and Barra do Pirai will be completed early in 1951. It will mean faster and cheaper shipping of mill goods and bring prices nearer those of imported steel.

Bullock to Expand Plant 50 Pct

Birmingham—The W. J. Bullock Co. has announced plans for a \$250,000 addition to its plant here. The company produces ingot brass, slab zinc, deoxidizing aluminum, babbitt aluminum and zinc ash. The expansion will increase the floor space and capacity about 50 pct. New equipment also will be added. Completion is expected early in 1951.

Spots Gray Market Chiseler

Pittsburgh—An alert Jones & Laughlin Steel Corp. employee touched off the investigation that led to arrest and sentencing of a self-styled Government procurement officer who tried to fast-talk his way into \$10,000 worth of oil well casing.

Insistence of Ed Porter, J. & L. tube sales department, that there was something phony about a "Government" order for 9000 ft of 7 in. O.D. casing, and the "Capt. A. B. Wright" who arranged it, put the FBI on the trail of Charles Herbert Sleeman, 38, of Tulsa, Okla., who pleaded guilty to a charge of impersonating a Government officer and got 2 years in the pen.

Sleeman, the FBI said, also approached National Tube Corp., Spang-Chalfant Div. of National Supply Co., Pittsburgh Steel Co., and Youngstown Sheet & Tube Co., with the same intent, but did not get around to placing an order.

The order form Sleeman used was unlike any other Government order Porter had seen—and he has handled hundreds—and no government military agency was mentioned. A check with Washington indicated "Capt. Wright" was a phony. The FBI caught up with Sleeman at Tulsa, Sept. 29.

While Sleeman was unsuccessful in efforts to get steel, he succeeded in obtaining six carloads of sheet rock, scarce building commodity, and resold some of it in the black market. The FBI described Sleeman as an unsuccessful construction man from Tulsa.

RFC Business Loan Interest Rates Increase from 4 to 5 Pct

Washington—Reconstruction Finance Corp. interest rates on business loans were hiked from 4 pct to 5 pct on Nov. 9.

A new system of service charges on loans was put into effect by the multimillion dollar government lending agency at the same time. RFC officials described the higher charges as designed to end the agency's \$5,900,000 annual deficit on lending operations. Board Chairman Elmer Harber said he did not expect the hikes to discourage borrowers.

In addition to increasing the interest rate, RFC took these steps to boost its revenues:

(1) The agency will charge applicants fees ranging from \$10 on loans of up to \$10,000 to \$2500 maximum on loans over \$10,000. In addition, one-eighth of 1 pct will be charged for amounts over \$10,000 up to the maximum fee of \$2500.

(2) Commitment fees will be charged on non-disbursed balances of funds remaining idle as long as 4 months.

(3) Banks participating in loans

with RFC will be charged all interest collected over 3 pct on the RFC portion of the loan. Now that the interest rate is 5 pct, banks will be charged 2 pct on loans under these conditions.

Mr. Harber said last week it costs RFC about \$16 million a year to make business loans. He hopes to cut this to \$11 million.

Alcan Builds New Power Plant

Montreal—Contract for a 200,000 hp hydroelectric project at the Chute du Diable on the Peribonka River, 230 miles north of here, has been awarded by Aluminum Co. of Canada to Fraser-Brace Engineering Co. Work on the dam and powerhouse in the Saguenay region of Quebec will start immediately. The new project will aid in expanding Alcan's aluminum output.

Expansion Doubles Production

Cudahy, Wis.—Expansion to double output of stress-relieved silver brazing and soldering preforms for the metalworking field has been completed, reports Don Lucas, president of the Lucas-Milhaupt Engineering Co. Equipment and personnel have been added.

Will War Crimp Civilian Magnesium Market?

Washington not clear on destination of standby plant magnesium . . . Reactivate six plants . . . War production may nudge aside hard-won civilian applications—By Ted Metaxas.

New York—The magnesium industry is again on its rearmament program springboard for another flyer at furious defense production that may crowd out commercial applications. With the government playing the artful dodger on questions of stockpiling and military needs, members of the Magnesium Assn., meeting here last week, wondered what the fate of their civilian market would be.

The industry does not yet know the destination of excess magnesium to be produced in 1951 and 1952 by six of 13 standby U. S. plants under the Oct. 27 Munici-

tions Board order. If stockpile greediness permits the possible 200 million annual pounds minus defense needs to slip mostly into the stockpile, magnesium fabricators may find it difficult to hold their hard-won postwar civilian market.

Born of the needs of war, the young industry has not had a chance to build extensive manufacturing capacity and cannot fully serve two masters. Even if enough magnesium were made available from standby plants, a deluge of defense orders could force plants chiefly into war work.

The immediate future of the industry is dependent on the whims of the international situation. Two-thirds of current production has already gone to war.

During World War II, annual capacity soared to 586 million lb from 1939's 6,700,000 lb. After the war, capacity deflated and Dow Chemical Co. is the only producer—48 million lb per year at its Freeport, Tex., plant. In the post-war era, magnesium men rallied and for the first time soundly wedged themselves into the industrial scene.

The squeeze on the civilian market is on. Military needs have grown to 3 million lb monthly. The commercial market could use 2 million lb but gets 1 million. Pre-Korea, military needs were 1 million lb a month.

In 1951 it is estimated that military demand will go to 4 million lb a month and civilian needs to 3 million. With the 80 million-lb-a-month Velasco plant producing at full capacity, it alone will make almost 7 million lb a month available. Add to this Dow's 4 million lb and the eventual 120 million lb of five other standby plants, coming in gradually, and there should be ample magnesium to permit the industry to devote all the capacity it can spare to civilian products and still feed the stockpile.

Sweat and Promotion

Why all this focus on a civilian market when the industry can be glutted with war work? Because magnesium has for the first time poked its head out of the cellar. It has taken sweat and promotion of brand new applications. The road has been rocky and magnesium men don't want to travel it again. They are a little weary of being fair-haired boys in crisis and forgotten men in peace. If other fields can give some capacity to defense and some to civilian production, they want to be able to do the same.

Dr. J. D. Hanawalt, of Dow, told members that a sound situation could evolve if standby plants produced for defense, leaving Dow

September Iron & Steel Production by Districts

BLAST FURNACE CAPACITY AND PRODUCTION—NET TONS	Number of Companies	Annual Blast Furnace Capacity July 1, 1950	PRODUCTION							
			PIG IRON		FERRO-MANGANESE AND SPIEGEL		TOTAL			
			Sept.	1950 to Date	Sept.	1950 to Date	Sept.	1950 to Date	Sept.	1950 to Date
Distribution by Districts:										
Eastern.....	12	13,353,580	1,089,478	9,289,160	30,399	243,283	1,119,877	9,532,432	102.2	95.4
Pitts.-Youngstn.	16	26,735,520	2,067,478	17,889,812	20,010	176,047	2,087,488	18,055,659	95.1	90.3
Clev.-Detroit.....	6	7,044,900	578,041	5,099,197	.....	.....	578,041	5,099,197	100.0	96.8
Chicago.....	7	15,897,190	1,204,710	10,087,968	.....	.....	1,204,710	10,087,968	92.3	84.8
Southern.....	8	5,215,640	444,844	3,708,470	8,389	71,477	453,233	3,779,947	105.9	97.8
Western.....	4	3,375,200	253,774	1,914,667	.....	.....	253,774	1,914,667	91.6	76.0
Total.....	37	71,621,730	5,638,325	47,989,083	58,798	490,787	5,697,123	48,479,870	98.9	90.6

STEEL CAPACITY AND PRODUCTION—NET TONS	Number of Companies	Annual Steel Capacity July 1, 1950	PRODUCTION							
			TOTAL STEEL			Alloy Steel* (Incl. under total steel)		Carbon Ingots-Hot Topped (Incl. under total steel)		
			Sept.	1950 to Date	Pct of Capacity	Sept.	1950 to Date	Sept.	1950 to Date	
Distribution by Districts:										
Eastern.....	24	20,387,490	1,596,216	13,818,887	95.4	92.2	123,110	931,650	310,638	2,511,864
Pitts.-Youngstn.	33	39,127,940	3,193,443	27,924,346	99.4	95.4	429,634	3,543,873	349,273	2,967,501
Clev.-Detroit.....	8	9,333,460	776,071	6,886,967	101.3	98.8	52,345	410,871	93,419	906,751
Chicago.....	15	21,351,700	1,745,579	15,466,575	99.5	98.6	133,418	1,163,001	236,918	2,140,743
Southern.....	8	4,568,320	409,214	3,557,899	108.6	104.1	6,385	40,575	4,845	44,621
Western.....	11	5,774,620	472,571	3,948,056	99.7	92.2	10,388	71,003	11,590	74,688
Total.....	78	100,563,500	8,193,194	71,601,533	99.3	95.9	754,480	6,160,973	1,006,583	8,649,366

* For the purpose of this report, alloy steel includes stainless and any other steel containing one or more of the following elements in the designated amounts: Manganese in excess of 1.65%, and Silicon in excess of 0.60%, and Copper in excess of 0.60%. It also includes steel containing the following elements in any amount specified or known to have been added to obtain a desired alloying effect: Aluminum, Chromium, Cobalt, Columbium, Molybdenum, Nickel, Titanium, Tungsten, Vanadium, Zirconium, and other alloying elements.

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facilities free for commercial manufacture.

The rate at which standby plants will be brought into operation is still vague. Maintenance crews are now working to get equipment in order. Factors that may slow reactivation are the condition of plants and the gathering and training of a labor force, according to J. Hartwell, of General Services Administration. The plants are located at Wingdale, N. Y., Painesville, Ohio, Valesco, Tex., Spokane, Wash., Canaan, Conn., and Manteca, Calif.

Magnesium is now regarded as a strategic metal by the armed services, although not as critical as some others. Its prime user, the Air Force, places higher importance on the metal.

Aircraft Sheet Short

The most serious fabricating shortage is in rolling capacity for thin aircraft sheet. Only two mills produce it at 300,000 lb a month. Within a year to 18 months Dow expects to complete a continuous rolling mill at Madison, Ill. A 4-high mill, it will turn out wider gages at 3 million lb a month.

Cheaper magnesium to compete with aluminum, having the advantage of less expensive hydroelectric power, is foreseen. Aluminum competition has been magnesium's chief holdback but magnesium men for the first time see themselves on the doorstep of big business.

They have come out of the sudden contraction of their industry in the postwar period and have taken seven league strides. They are now facing another wild revival and a start from scratch as a civilian industry.

Appoint Munitions Board Chairman

Washington — The appointment of John D. Small, a veteran government control administrator, as chairman of the Munitions Board is expected to speed the answer to the 5-months-old question of the military's steel needs.

President Truman named the 57-year-old former WPB official last week to the key procurement and stockpiling position. The post had been vacant since Hubert Howard resigned on September 18.

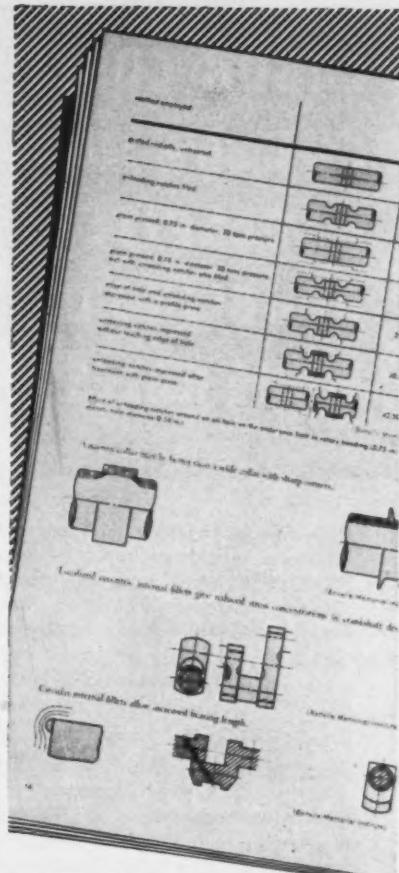
September Finished Steel Shipments

As Reported to American Iron & Steel Institute

STEEL PRODUCTS	Current Month						To Date This Year					
	Carbons	Alloy	Stainless	Total	Per cent of total shipments	Carbons	Alloy	Stainless	Total	Per cent of total shipments		
Bars—	14	73,356	14,193	1,442	88,991	1.5	490,548	87,774	12,256	590,574	1.1	
Bars, flats, billets, tube rounds, sheet bars, etc.	1B	140,178	38,426	1,063	179,665	2.9	1,265,596	311,466	7,202	1,584,264	3.0	
Wire rods	2	13,152	—	—	13,152	0.2	88,834	—	—	88,834	0.2	
3	49,901	1,175	58	51,128	0.8	592,378	10,796	810	603,964	1.2		
Structural shapes (heavy)	4	352,308	3,139	18	355,465	5.8	3,041,666	27,167	139	3,068,992	5.6	
Sheet rolling	5	33,462	—	—	33,462	0.6	243,778	—	—	243,778	0.5	
Plates	6	459,697	21,161	1,058	481,912	7.8	1,730,613	125,713	6,068	1,862,394	3.7	
Bar—Standard (over 60 lbs.)	7	14,028	36	—	14,062	0.3	1,316,649	—	—	1,316,649	2.5	
Bar—All other	8	11,876	13	—	11,889	0.2	86,778	53	—	86,831	0.2	
Steel bars	9	11,513	—	—	11,513	0.2	86,150	—	—	86,150	0.2	
Tin plates	10	36,694	—	—	36,694	0.6	384,635	—	—	384,635	0.6	
Tin spiles	11	12,148	—	—	12,148	0.2	105,157	—	—	105,157	0.2	
Wheels (rolled & forged)	12	23,810	—	—	23,810	0.4	182,644	63	—	182,709	0.4	
Alms	13	11,268	53	—	11,268	0.2	90,533	463	—	90,578	0.2	
Bar—Hot rolled (incl. light shapes)	14	582,004	169,212	2,701	750,917	11.2	4,415,967	1,431,350	18,904	5,866,241	11.1	
Bar—Rebar	15	150,986	—	—	150,986	2.1	2,120,202	260	—	2,120,461	2.3	
Bar—Cold finished	16	119,343	23,487	3,114	146,144	2.6	966,559	181,514	20,585	1,186,650	2.3	
Bar—Test Steel	17	1,641	6,836	—	8,477	0.1	12,014	40,393	—	60,407	0.1	
Standard pipe	18	234,517	129	8	234,646	3.8	1,914,471	—	220	1,914,738	3.6	
Oil country pipe	19	121,202	16,261	—	139,463	2.3	1,083,913	165,165	—	1,249,078	2.3	
Line pipe	20	303,361	—	—	303,361	4.9	2,780,359	6	—	2,780,365	5.2	
Structural tubing	21	50,978	19,465	363	70,808	1.3	376,515	130,764	2,426	589,705	1.0	
Sheet rolling	22	19,666	3,646	757	22,073	0.4	155,676	17,960	5,339	175,173	0.3	
Wire—Drawn	23	235,964	3,286	1,911	241,121	3.9	2,034,705	38,494	14,383	2,077,512	3.9	
Wire—Nails & staples	24	70,373	—	1	70,374	1.1	652,665	—	69	652,731	1.2	
Wire—Bared & twisted	25	19,715	—	—	19,715	0.3	175,049	—	—	175,049	0.3	
Wire—Galvanized wire fence	26	41,778	—	—	41,778	0.7	363,993	—	—	363,993	0.7	
Wire—Bar wire	27	8,905	—	—	8,905	0.1	52,464	—	—	52,464	0.1	
Block plane	28	52,721	—	—	52,721	0.9	391,268	—	—	391,268	0.7	
Tin & some plates—not dipped	29	167,341	—	—	167,341	2.7	1,436,246	—	—	1,436,246	2.7	
Tin & some plates—dipped	30	246,145	—	—	246,145	4.2	2,459,674	—	—	2,459,674	4.2	
Sheets—Hot rolled	31	1,931	25,836	2,138	25,836	10.9	3,428,718	186,705	21,415	5,730,459	10.9	
Sheets—Cold finished	32	782,346	10,311	9,063	782,346	12.1	6,624,911	78,480	76,322	6,796,633	12.9	
Sheets—Galvanized	33	195,532	1,245	—	195,532	3.0	1,712,294	20,346	—	1,732,640	3.1	
Sheets—All other coated	34	18,712	—	—	18,712	0.3	172,610	—	—	172,610	0.3	
Sheets—Electroplated	35	20,968	—	—	20,968	0.3	193,039	—	—	193,039	0.3	
Sheets—Hot rolled	36	9,123	53,568	—	68,691	1.0	75,138	144,687	—	519,823	1.0	
Sheets—Cold rolled	37	205,826	4,250	367	210,443	3.4	1,656,398	31,462	5,767	1,693,627	3.4	
Sheets—Galvanized	38	183,186	1,647	18,277	199,012	2.6	1,198,013	10,618	12,114	1,233,762	2.6	
TOTAL		5,692,140	423,435	39,779	6,145,354	100.0	449,022,525	3,360,126	321,010	52,701,663	100.0	

During 1949 the companies included above represented 99.3% of the total output of finished rolled steel products as reported to the American Iron & Steel Institute.

* Not listed.



The Design Engineer can improve service life

Ingenious design, based upon the understanding of imposed stresses and their proper control, can increase the life of machinery. A 72 page booklet, free upon request, discusses the relation between design, the choice of steel, and its treatment. Send for it.

Climax Molybdenum Company

500 Fifth Avenue • New York City



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3 KEYS TO SATISFACTION

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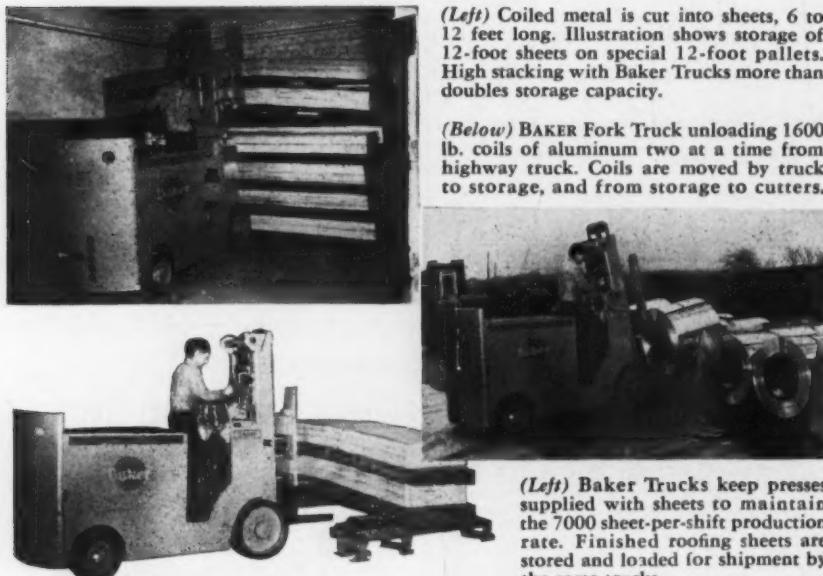
**LABOR COSTS
CUT 36% per ton
DESPITE
DOUBLING OF
WAGE RATES**

Baker Trucks
help
**SOUTHERN STATES
IRON ROOFING CO.**
increase production
with lower
manufacturing costs

How BAKER Trucks work with new production equipment to provide increased output at lower per-ton cost, is shown in this company's Birmingham plant, one of ten branches using a total of twelve Baker Trucks. 1600-pound coils of aluminum arrive on flat-bottom highway trucks. Two Baker 6000-pound Fork Trucks, and a traveling crane, require only about 10 minutes to unload a truckload of 27 coils, weighing over 40,000 pounds. In another 20 minutes, the Baker Trucks warehouse the entire load.

From storage, the trucks move the coils to cutters, which shear the metal in 6- to 12-foot lengths. These sheets are palletized and delivered by truck to the presses at working height. These new high-speed presses handle some 7,000 sheets in eight hours—150% more than former equipment. Processed roofing sheets are transported to storage and later to shipping carriers by the fork trucks.

Although wage rates have doubled, direct labor costs have been reduced about 36% from former methods using hand labor and slower presses.



(Left) Coiled metal is cut into sheets, 6 to 12 feet long. Illustration shows storage of 12-foot sheets on special 12-foot pallets. High stacking with Baker Trucks more than doubles storage capacity.

(Below) BAKER Fork Truck unloading 1600 lb. coils of aluminum two at a time from highway truck. Coils are moved by truck to storage, and from storage to cutters.

(Left) Baker Trucks keep presses supplied with sheets to maintain the 7000 sheet-per-shift production rate. Finished roofing sheets are stored and loaded for shipment by the same trucks.

**BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company**

1227 West 80th Street

In Canada: Railway & Power Engineering Corporation, Ltd.

Cleveland 2, Ohio

Baker INDUSTRIAL TRUCKS

Face Building With Aluminum

New York—Some 60 tons of aluminum have replaced conventional brick facing materials in the new 24-story skyscraper at 655 Madison Ave. Windows, spandrels and pier covers are aluminum, and four miles of aluminum trim have been used. Reflectivity of the metal and a 2-in. air space between the metal panels and the brick back-up provides insulation.

Pressed Steel Car Reopens Plant

Mt. Vernon, Ill.—After a year's shutdown, Pressed Steel Car Co.'s plant here has been reopened with a backlog of orders totaling 5950 cars—enough to keep it busy for a year.

John I. Snyder, Jr., president, announced that Pressed Steel Car made its first shipment last week on an order for 4500 box cars for the Pennsylvania Railroad. Its John Trailer Div. has been awarded an Army contract of over \$4 million for 625 20-ton front loading trailers.

Industry Migrates to New England

Boston—Migration of seven New York and Southern firms into the New England industrial area and expansion of about 50 local firms was announced by the New England Council in a survey presented this week at its 25th anniversary meeting here.

Most of these plans were formulated before the Korean War and will be in addition to the \$279 million spent for non-residential building in the first 9 months of 1950, disclosed the survey.

Brazil to Develop Manganese

Rio de Janeiro—Manganese deposits in the Amapa Territory will be developed under a recent bill approved by the Brazilian chamber of deputies. The bill authorizes the Treasury to guarantee a \$35 million loan from the World Bank to Industria e Comercio de Minérios, S. A., with which Bethlehem Steel will develop the deposits.

Republic Steel Negotiates To Build Blast Furnace in Cleveland

Cleveland—Second major expansion program in the past 7 months in the Cleveland district is under consideration by Republic Steel Corp.

Tentative plans, dependent on outcome of government negotiations, call for construction of a new blast furnace rated at 450,000 tons annual capacity. Auxiliary buildings and equipment would raise the total estimated cost to \$35 million. A company spokesman said that the project is dependent entirely on whether the government will permit accelerated depreciation on buildings and equipment to be constructed.

Republic is negotiating with the government for property on which to build the furnace. Presumably the company would like to build the furnace near the No. 5 furnace built by Republic for the government in World War II. Republic operates this furnace on sub-lease from Kaiser. Title to adjacent land is held by the government. Last May Republic announced a 10 pct expansion of its openhearth capacity here.

Italian Mill Gets ECA Grant

Washington—An additional \$2.2 million in Marshall Plan funds has been allotted for steelmaking equipment for the Finsider steel plant at Cornigliano, Italy. It will be spent for a cold strip mill and electrical equipment and motors for the plant's 80-in. hot strip mill.

This brings the Marshall Plan investment in the three Finsider plants to a total of about \$26.2 million or about 24 pct of the total \$111 million authorized expenditures on the plants.

Calls for Metalmaking Ingenuity

Carnegie, Pa.—Greater ingenuity in metalmaking and designing will help solve the problem of critical metals needed for defense, according to Joseph Kinney, Jr., president, American Cladmetals.

NOTICE

to all

Pig Iron Users

We have been advised that certain individuals have solicited orders for Lone Star Steel Company pig iron for delivery at premium prices. Such solicitations are without the knowledge or approval of this Company. The policy of Lone Star Steel Company continues to be one of selling direct to melters of pig iron at regular published prices. This company will not knowingly sell to any buyer whose purchase is for resale.

The only authorized agents for Lone Star Steel pig iron are:

T. H. BENNERS & CO., Birmingham,
Alabama

DEBEVOISE-ANDERSON CO., INC.,
New York City, N. Y.

WILSON & GEO. MEYER & CO.,
San Francisco, Calif.

All inquiries should be directed to one of the above authorized agents or to the Sales Department of Lone Star Steel Company.

E. B. GERMANY, President

LONE STAR STEEL COMPANY
DALLAS, TEXAS

precision
in
every
thread



Slotted or Phillips head machine screws, wood screws, stove bolts, tapping screws, special headed products; nuts, rivets, chocks, wire forms, screw machine products . . . in steel, stainless steel, copper, brass, bronze, everdur, nickel, nickel silver, monel, aluminum . . .

WRITE FOR catalog of complete line of Blake & Johnson fastenings. Address Dept. IA-11.

THE BLAKE & JOHNSON COMPANY, WATERVILLE 48, CONN.



BLAKE &
JOHNSON
Fastenings

• News of Industry •

STEEL CONSTRUCTION NEWS



Fabricated steel awards this week included the following:

- 530 Tons, Trenton, N. J., approach to Delaware River bridge (Contract No. 4) for Delaware River Joint Toll Bridge Commission, George M. Brewster & Son, Bogota, N. J., low bidder.
- 400 Tons, New Orleans, La., street underpass for Boh Bros. Construction Company, to Virginia Bridge Company, Birmingham.
- 250 Tons, Johnson City, N. Y., warehouse for Endicott Johnson Co., Sorondi Construction Co., general contractors.
- 177 Tons, Philadelphia, plate work for tanks for Gulf Oil Corp., to Chicago Bridge & Iron Works.
- 120 Tons, Morrisville, Pa., approach to Delaware River bridge (Contract No. 3) for Delaware River Joint Toll Bridge Commission, Union Building & Construction Corp., Passaic, N. J., low bidder.
- 103 Tons, Chattanooga, Tenn., heat treating building for Wheland Company, to Virginia Bridge Company, Birmingham.
- 100 Tons, Berlin, N. J., building for Owens Illinois Glass Co., Hughes-Foulkrod Co., Philadelphia, general contractor.

Fabricated Steel inquiries this week included the following:

- 3186 Tons, Allegheny County, Construction of divided highway, three (3) deck plate girder and I-beam viaducts, one (1) through plate girder viaduct and approaching rampa-Pennsylvania Dept. of Highways, Harrisburg, Pa. Bids due Dec. 1, 1950.
- 1885 Tons, Newtown and Southington, Conn., four span steel deck girder bridge, relocation U. S. Route 6.
- 700 Tons, Bethesda, Md., U. S. Government boiler plant and incinerator building. Bids due Nov. 21.
- 350 Tons, Westchester, Pa., gymnasium and swimming pool at Westchester State Teachers' College, through the General State Authority. Bids due Nov. 29.

Reinforcing bar awards this week included the following:

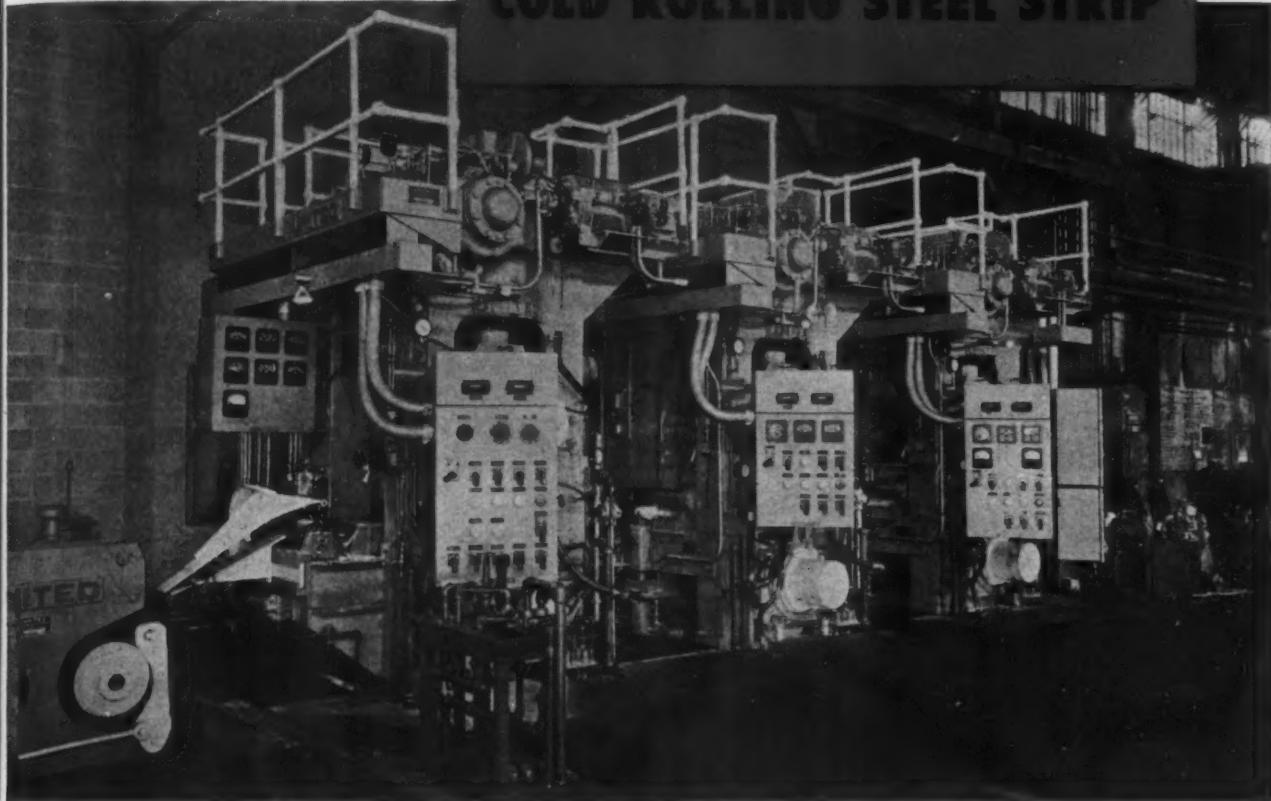
- 625 Tons, Du Page County, Ill., Argonne National Labs. building, to Bethlehem Steel Co.
- 500 Tons, Grand Forks, N. D., St. Michael's Hospital, to U. S. Steel Supply Co.
- 450 Tons, Morrisville, Pa., approach to Delaware River bridge (Contract No. 3) for Delaware River Joint Toll Bridge Commission, Union Building & Construction Corp., Passaic, N. J., low bidder.
- 409 Tons, Trenton, N. J., approach to Delaware River bridge (Contract No. 4) for Delaware River Joint Toll Bridge Commission, George M. Brewster & Son, Bogota, N. J., low bidder.
- 400 Tons, South Bend, Ind., University of Notre Dame, to Olney J. Dean Co., Chicago.
- 325 Tons, Philadelphia, Wharton School of Finance and Commerce, University of Pennsylvania; McCloskey & Co., same city, general contractor.
- 280 Tons, Milwaukee, Chain Belt Co., to Pipkorn Co.
- 125 Tons, Canton, Ohio, Lumberman's

« « « KEEPING PACE IN AN EXPANDING INDUSTRY » » »

Thomas Steel

ADDS NEW CAPACITY FOR COLD ROLLING STEEL STRIP

10" x 26" x 24" 4-high, 3 stand tandem cold mill



PRINTED BY THE AMERICAN PRESS

The nation's steelmaking and finishing capacity has expanded mightily since 1945.

Keeping pace with the progress of the entire industry, The Thomas Steel Company is maintaining its position as a foremost specialty producer.

Latest achievement in a continuing modernization program is the completion of this high-speed tandem cold reduction mill with an average annual capacity of 120,000 tons.

Expanding the range of Thomas Strip sizes and gauges—within the broad limits of steel strip

—the new capacity and production facilities replace equipment which has become obsolete in the face of current huge product demand.

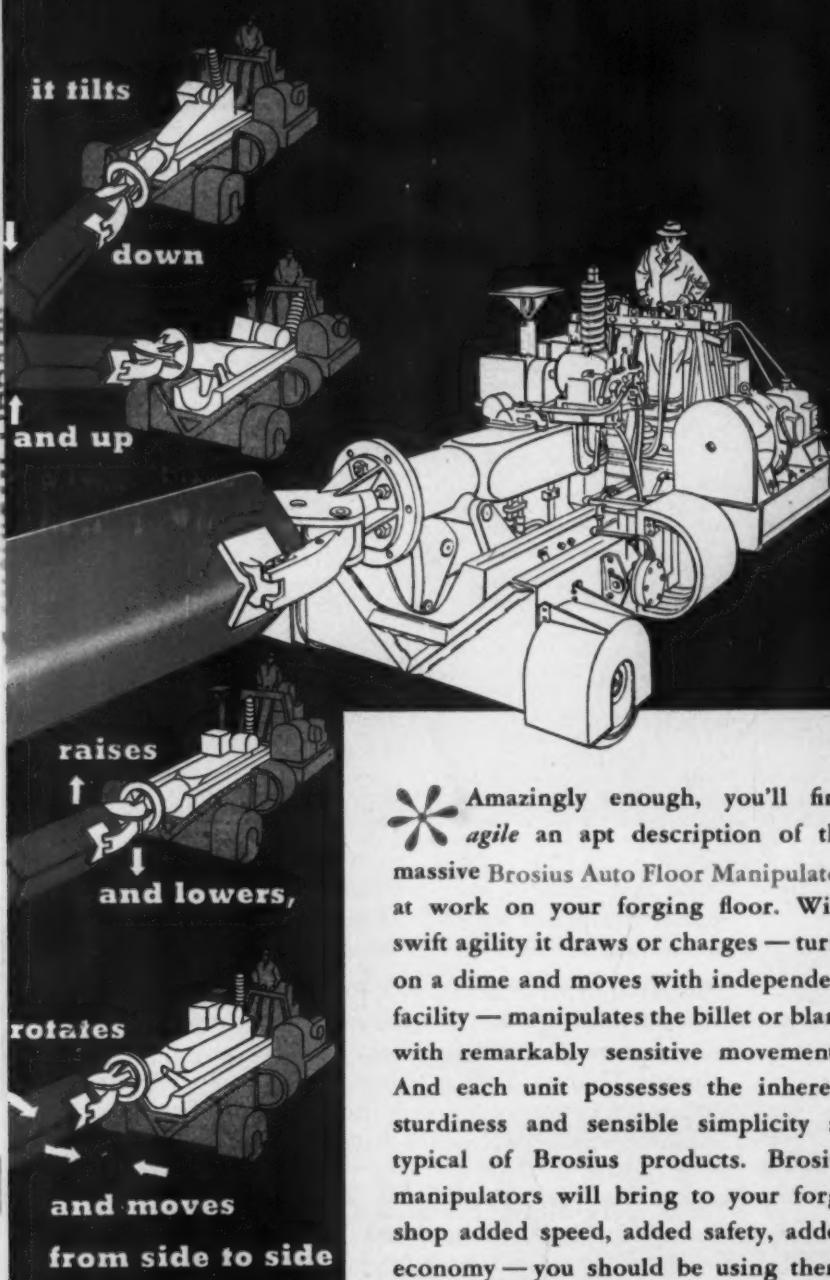
This latest expansion has, of course, been possible only through the co-operation of the many manufacturers who have so enthusiastically adopted Thomas Strip for their products. To them, this forward step promises a future of improved service and better-than-ever Thomas Strip quality.

THE THOMAS STEEL COMPANY
WARREN, OHIO
Specialists in Cold Rolled Strip Steel

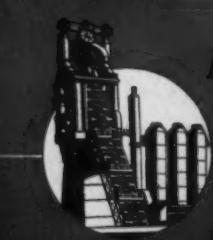


Electrolytically pre-coated with Zinc, Copper, Brass, Nickel and Chromium
In Natural, Planished and Buffed Finishes • Hot Dip Tin and Lead Alloy Coatings
Lacquer Coated in Colors • Alloy Strip Steel • Annealed Spring Steel
Uncoated Strip Steel • All produced to your specifications

agile*



Amazingly enough, you'll find *agile* an apt description of the massive Brosius Auto Floor Manipulator at work on your forging floor. With swift agility it draws or charges — turns on a dime and moves with independent facility — manipulates the billet or blank with remarkably sensitive movements. And each unit possesses the inherent sturdiness and sensible simplicity so typical of Brosius products. Brosius manipulators will bring to your forge shop added speed, added safety, added economy — you should be using them. Write for literature.



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Company Inc.

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FREE

PUBLICATIONS

Continued from Page 34

zontal plate and vertical plate models are described. *Belke Mfg. Co.*

For free copy insert No. 6 on postcard, p. 35.

Multiple Drill Heads

A new 4-p. folder describes 33 different types of Thriftmaster drillheads. Both gear-driven and full ball bearing universal joint types are detailed. Data includes drill capacities from No. 60 to 1½ in. steel, range of adjustment from 1 in. to 14.2 in., overall dimensions, weights, maximum speeds and other design and engineering facts. *Thriftmaster Products Corp.*

For free copy insert No. 7 on postcard, p. 35.

Pump Catalog

A full line of pumps for hard to handle liquids and dry materials is presented in a new 12-p. condensed catalog. For easy reference, the booklet is organized in principal sections covering pumps for (1) corrosive and non-corrosive liquids, (2) solids-carrying liquids, and (3) dry and semi-dry materials. Suggested applications, operation and advantages are listed. The catalog contains a complete list of Yeomans distributors, names and addresses. *Yeomans Brothers Co.* Address inquiry on company letterhead to this column.

New Thermocouple Manual

A new 42-p. 1950 edition of the Wheelco data book and catalog contains prices in effect, application recommendations and pertinent information concerning instrument sensing units and associated accessories. Special items listed include resistance bulbs and wells, radiation detector, special thermocouples for plastic injection and extrusion machines and a new molten metal thermocouple for ferrous metals. The large standard line of thermocouples, protecting tubes, lead wire and insulators is shown, with complete descriptions and specifica-



SPEED CLAMPS* PRODUCE 80% TIME SAVINGS 66% COST SAVINGS

FOR ALLEN ELECTRIC & EQUIPMENT CO.
Kalamazoo, Michigan

There is nothing like getting down to "shirt-sleeve" fundamentals when you are specifying fasteners. That's the way Allen Electric & Equipment Co. feel about it...as you can see from the point-blank comparison made in an excerpt from one of their letters: "We submit the following information comparing the Tinnerman SPEED CLAMP to a standard type clamp as applied to the production of our Model H-100 Kwik-Serv Oil Changer:

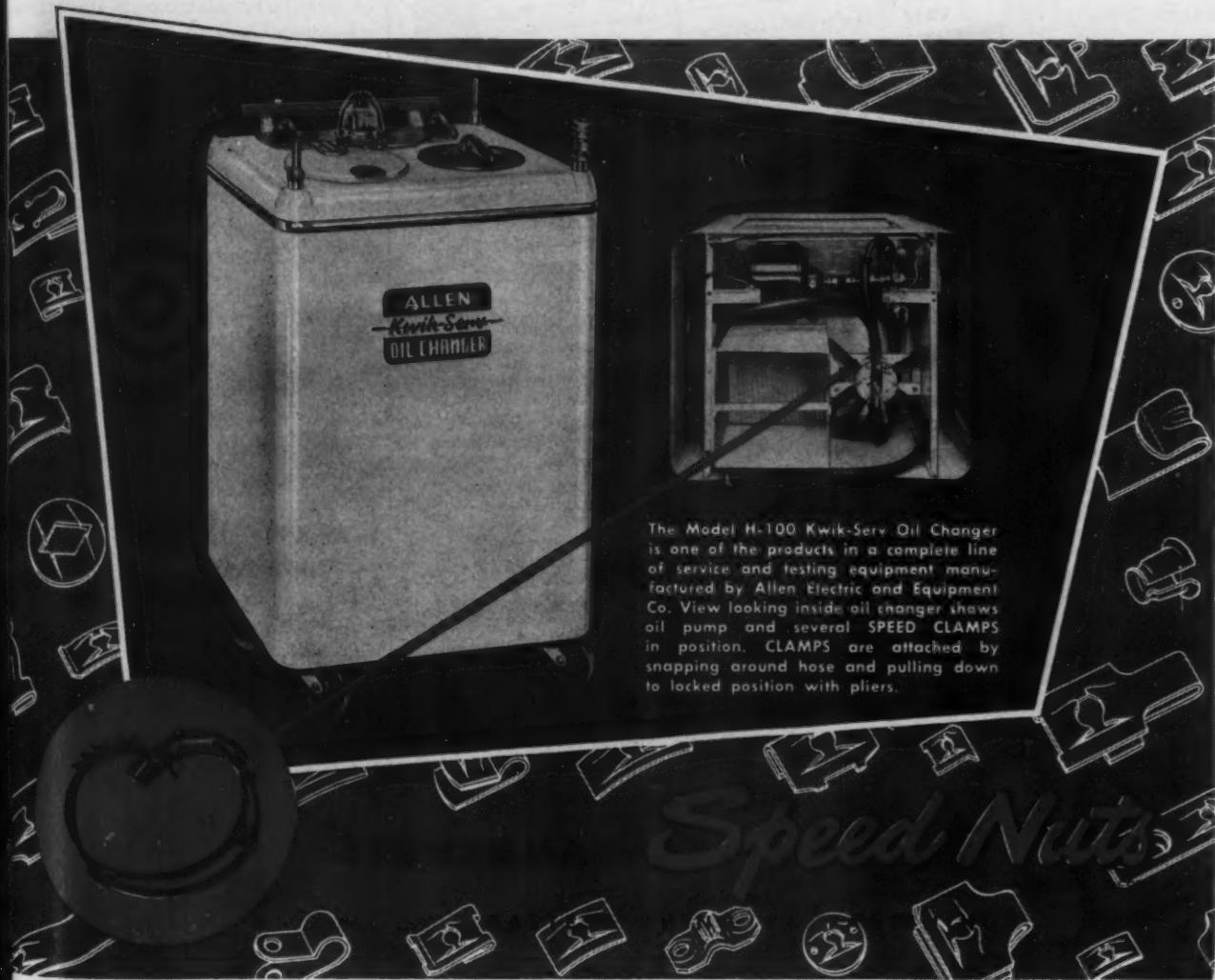
1. Tinnerman SPEED CLAMP, .0148 cents each.
2. Standard type hose clamp, .0433 cents each.
3. 15 Tinnerman SPEED CLAMPS per Oil Changer take 8 minutes for installation.
4. 15 standard type hose clamps per Oil Changer take 40 minutes for installation.

"Add to these comparisons the fact that SPEED CLAMPS have chalked up an excellent field performance record, and you'll understand why we are so enthusiastic about them."

Reports like this lead us to believe we can help you. We would welcome an opportunity to prove how SPEED NUT brand fasteners can improve your assembly cost picture. Ask your Tinnerman representative to call, and write today for your copy of "SAVINGS STORIES". TINNERMAN PRODUCTS, INC., Box 6688A, Cleveland 1, Ohio.

In Canada: Dominion Fasteners Limited, Hamilton, Ontario.

In Great Britain: Simmonds Aerocessories, Ltd., Treforest, Wales.



The Model H-100 Kwik-Serv Oil Changer is one of the products in a complete line of service and testing equipment manufactured by Allen Electric and Equipment Co. View looking inside oil changer shows oil pump and several SPEED CLAMPS in position. CLAMPS are attached by snapping around hose and pulling down to locked position with pliers.

WHEELABRATORTM saves \$9525

AIRLESS BLAST CLEANING

A YEAR

FREE PUBLICATIONS

Continued

tions. Essential data pertaining to making, checking, selecting and ordering thermocouples; wire sizes and resistances and temperature-millivolt curves is included. *Wheelco Instruments Co.*

For free copy insert No. 8 on postcard, p. 31.

About Security Windows

Fenestra security windows, with strong steel guards that give two way protection, from inside and outside, against prowlers and against removal of material, are described in a new bulletin. Types and sizes of security windows used in stores, warehouses, laundries, gas stations, garages and small manufacturing or processing plants are listed and installation details are shown. *Detroit Steel Products Co.*

For free copy insert No. 9 on postcard, p. 31.

Wired Audio Systems

Instant two-way communication to mobile or stationary equipment wherever electric current runs is the feature of Trolleyphone wired audio systems, described in a new 4-p. folder. Features of these Femco selective or non-selective systems are presented along with a wiring diagram showing typical layouts of microphone speaker and combined mike-speaker stations. How these systems give constant supervision of any or every operation is shown. *Farmers Engineering and Mfg. Co.*

For free copy insert No. 10 on postcard, p. 31.

New Cargo Truck

A bulletin showing the new line of Fageol Super Freighter large payload capacity cargo trucks contains complete descriptions with detailed specifications. Comparative figures are presented to show how these trucks transport more payload than other trucks or tractor-trailer combinations. They are available in a wide variety of models and body styles, in addition to standard cargo trucks, and are powered by under-floor-mounted engines operating on either gasoline or propane, as shown in the folder. *Twin Coach Co.*

For free copy insert No. 11 on postcard, p. 31.

Resume Your Reading on Page 35

at the
MAJESTIC CO.
Huntington,
Indiana

MACHINE	FORMER METHOD	WHEELABRATOR METHOD
	8 tumbling mills	66" Wheelabrator Swing Table
PRODUCTION	125 tons per month	125 tons per month
LABOR	2 men at 9 hours each	1 man at 8 hours — 8 man hours daily
CLEANING COST	Per Ton — \$13.29	Per Ton — \$6.94
SAVINGS		
per ton		\$6.35
per month		\$793.75
per year		\$9525.00

Gray iron castings ranging in weight from a few ounces up to 400 pounds are cleaned in Majestic's foundry.

Since the Wheelabrator Swing Table was installed the bulk of their production changed from large, heavy furnace work to thousands of small, relatively fragile pieces. According to Mr. Claude Morgan, Plant Supt., it would have been impossible to operate the foundry profitably without the Wheelabrator Swing Table—breakage would have been prohibitive and labor costs excessive.

Costs go down—profits go up, when you use Wheelabrator. Write today for full information.

TRU-STEEL shot lasts longer

By replacing Chilled Iron Shot with TRU-STEEL on Ohio plant saved 62% on the cost of shot and machine parts. TRU-STEEL shot lasts many times longer than chilled iron because it wears down slowly without breaking down.

A test will show you how much you can save. Write today for descriptive Bulletin No. 59.

After 1500 passes

American

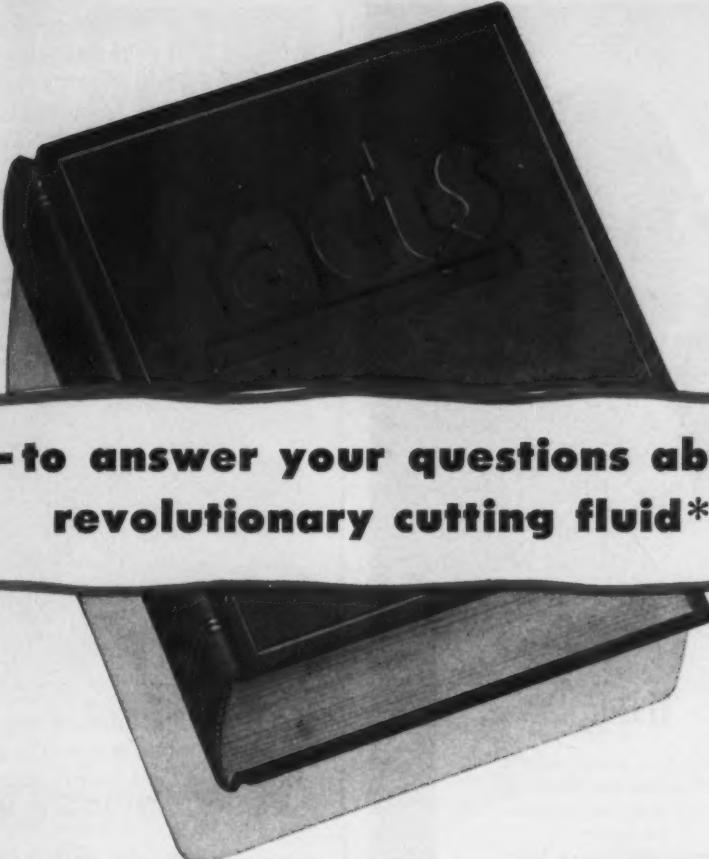
WHEELABRATOR & EQUIPMENT CORP.

510 S. Brykit Street

Mishawaka 3, Indiana

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

November



—to answer your questions about this revolutionary cutting fluid*

Q.

Will ANTISEP All-Purpose Base work safely
in automatics?

A. Yes. It has been and is being used in every type of screw machine. The Houghton Man has data on how to clean up machines before installing and how to handle machine lubricant mixes.

Q.

Will ANTISEP A. P. Base gum up, or cause
gumming?

A. Any gumming which might occur is the result of putting this coolant in dirty machines. The new mix should be run for a day or two and then dumped to get rid of "gunk" loosened by the washing action of A. P. Base. Water softener may be needed in some localities.

Q.

Will Antisep A. P. Base live up to its name
as regards antiseptic value?

A. Yes. No dermatitis complaints have been recorded. A powerful germicidal additive prevents growth of "bugs." Operators like the antiseptic ability of A. P. Base.

Q.

Should Antisep A. P. Base be used for grinding?

A. Not usually recommended for grinding, as film strength additives tend to load up the wheel. Here we advise ANTISEP SOLUBLE GRINDING OIL.

Q.

Can this Base be used as a drawing lubricant
also?

A. Yes. It may be mixed with equal parts of oil or water and used for stamping or punching.

Q.

Will Antisep A. P. Base clean readily from
the work?

A. Yes, in any mild alkaline cleaning bath, emulsion cleaner tank or standard degreaser.

Q.

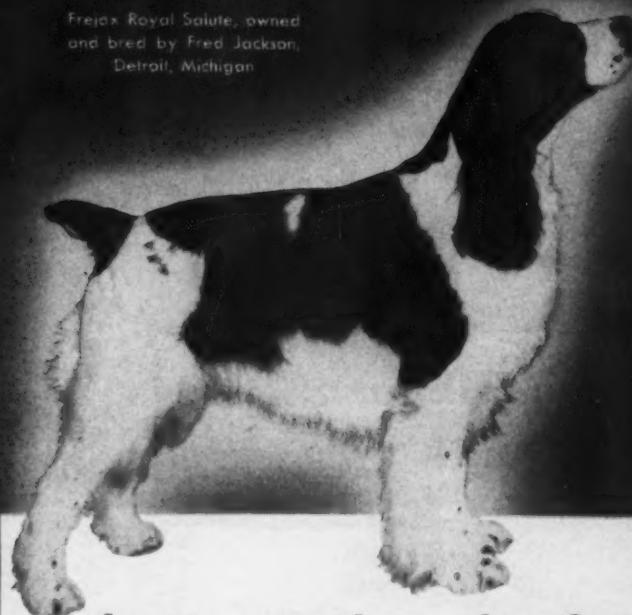
Will Antisep All-Purpose Base save me
money?

A. Yes—mixed with water, it costs between 6 and 8 cents per gallon, depending upon the dilution. Compare that with your 22 to 45 cent straight oils!

For answers to any further questions, prices and application data, write
E. F. Houghton & Co., 303 West Lehigh Avenue, Philadelphia 33, Pa.



Frejax Royal Salute, owned and bred by Fred Jackson, Detroit, Michigan



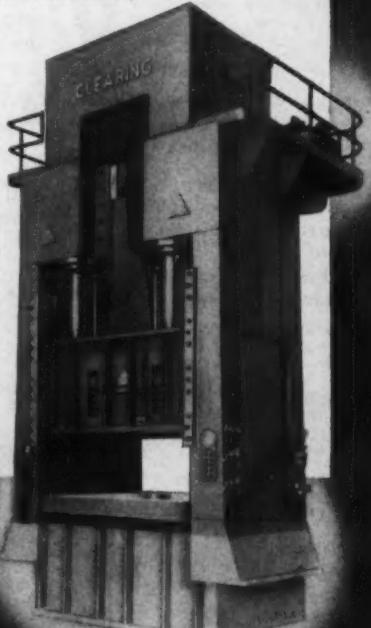
Just another dog?

To the casual observer he may look like just a neighbor's pet, but this is Frejax Royal Salute, holder of "Best in Show" in over forty dog shows. This outstanding achievement is the result of years of selective breeding.

Production men know that, while presses may look alike to the uninitiated, "breeding" pays here too. The years of practical Clearing experience combined with advanced engineering concepts make every Clearing press a thoroughbred. Clearing designs are never shackled to tradition, a fact which accounts for the performance records established by Clearing presses in such a wide variety of operations.

Before you invest in more equipment, have a Clearing representative explain how Clearing presses can save dollars and cents in your plant. Wire today to bring Clearing's fine engineering staff to bear on your problem, without obligation.

Heavy Double Action
Clearing Hydraulic Press
for Aircraft Industry



CLEARING PRESSES

THE WAY TO EFFICIENT
MASS PRODUCTION



CLEARING MACHINE CORPORATION

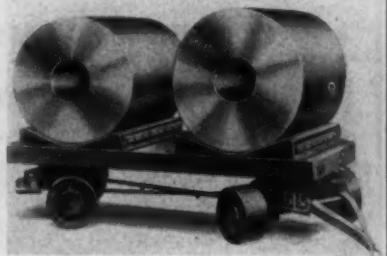
6499 WEST 65TH STREET • CHICAGO 38, ILLINOIS

NEW

PRODUCTION IDEAS

Continued from Page 38

strip rides in tandem on V blocks. A rubber covering on the blocks protects the steel against damage. A wide wheel base and low center



of gravity eliminate danger of tipping over. The bed height is 24 in. width 26 in. and overall body length 102 in. *Phillips Mine & Mill Supply Co.*

For more data insert No. 27 on postcard, p. 38.

Small Belt Conveyer

5 ft long with 8-in. neoprene belt that travels at 125 fpm.

The belt has flights 1 1/8 in. high, spaced on 18-in. centers. (Unit is available without flights.) Take-up mechanism provides for ample belt adjustment. Pulleys are equipped with permanently lubricated and sealed ball bearings. The unit is powered by 1/12 hp motor mounted inside the conveyer channel. Side



rails running full length of the conveyer may be removed when handling cartons and bulky materials. *Industrial Engineering & Mfg. Co.*

For more data insert No. 28 on postcard, p. 38.

Portable Ac Welder

Features automatic hot-start control and silicone insulation.

A new silicone-insulated, portable ac welder using 3/32 to 1/4 in. diam electrodes, is equipped with

automata
provide
out any
correct
furnish

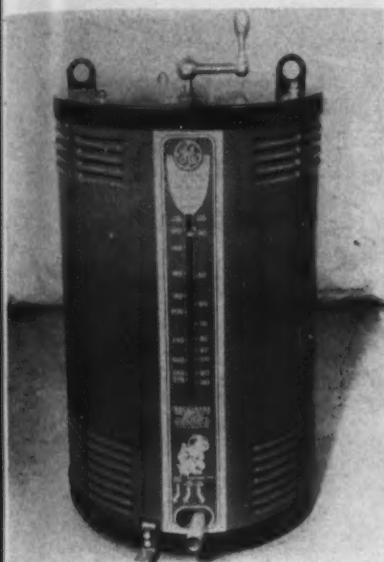
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other e

Novem

automatic hot-start control that provides instant arc striking without any manual adjustment. The correct amount of boost is always furnished for any specific current



setting. The ampere range is covered by three overlapping current ranges that permit precise current control. Safety and operating dependability is provided by the insulation since it is unaffected by high temperatures and is water repellent. The welder is 17 in. diam x 35 in. high. Current range is from 40 to 375 amp. *General Electric Co.*

For more data insert No. 29 on postcard, p. 35.

Packings and Gaskets

Made of Teflon; inert to chemicals, heat resistant, tough and durable.

These packings and gaskets made of Du Pont Teflon are unaffected by acid and are highly resistant to organic solvents and alkalies. They



operate at temperatures from below -90° to $+500^{\circ}\text{F}$ and have high mechanical strength and a low coefficient of friction within that temperature range. Braided and molded Teflon packings are used on valves, pump rods or shafts and other equipment. For gasketing

Turn to Page 122

melt metal
and save
up to
40%
on fuel!

Kemp Immersion Pots are available in all sizes. Shown here is a 44" Pot. Capacity: 10,000 lbs., casting rate: two tons per hour!

How immersion heating, developed by KEMP, assures low fuel costs and faster heating for both large and small melting units.

For maximum economy in melting soft metals, lead, pewter, tin or salt—install modern Kemp Immersion Heating! Actual cases prove that Kemp Immersion Heating cuts fuel bills up to 40% and more. Provides rapid heat recovery in $\frac{1}{2}$ the time . . . assures the high thermal efficiency for both large and small units!

POSITIVE HEAT CONTROL

Replace conventional heating or melting equipment with modern, efficient Kemp Immersion Pots and save money. There's no brickwork to steal heat . . . no external combustion chamber . . . no

carbon monoxide . . . no temperature overrun. You get high melting rates, reduced dross formation, speed of temperature recovery after adding cold materials . . . PLUS an estimated fuel saving of up to 40% and more!

SEND FOR DETAILS

The Kemp Carburetor, part of each installation, assures complete combustion with no waste. One-pipe air and fuel feed reduces installation costs, simplifies maintenance. Get the facts. Find out how much you can save. Fill out and mail coupon for Bulletin IE-11 today!

KEMP IMMERSION MELTING POTS

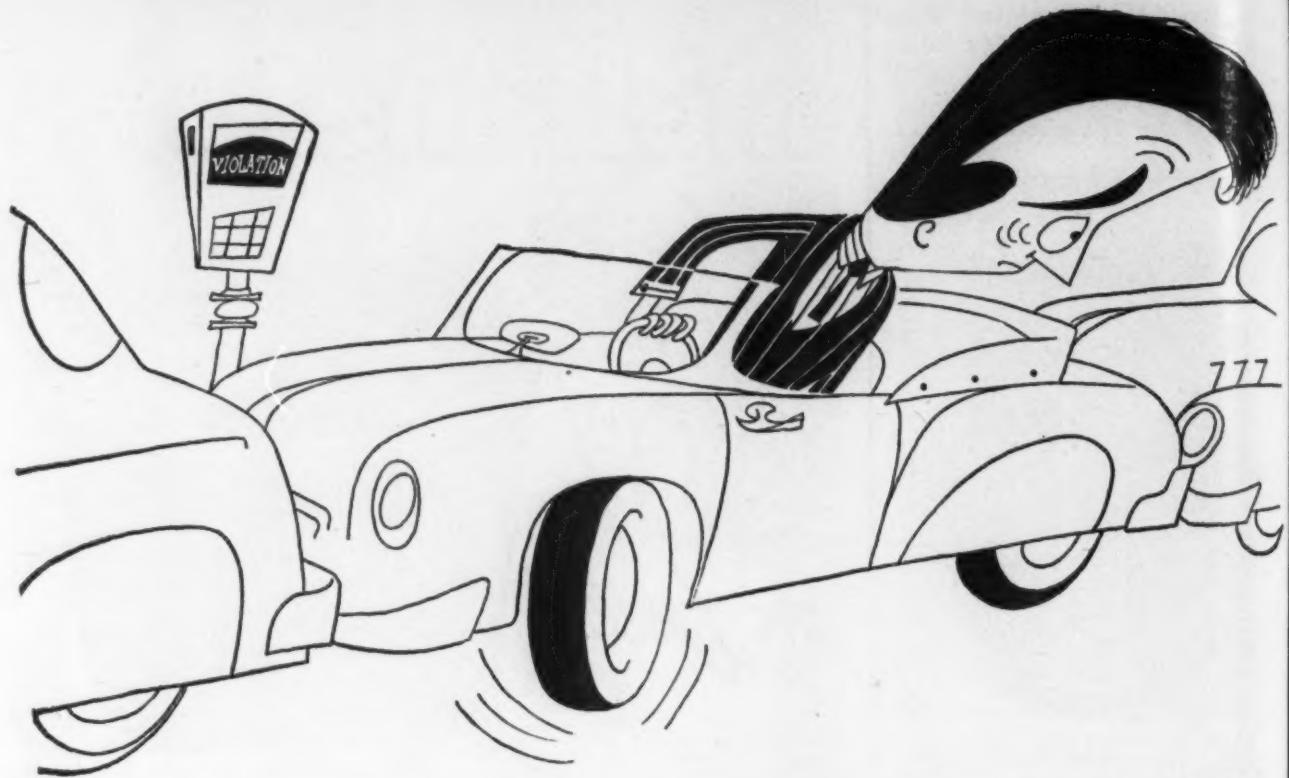
OF BALTIMORE

THE C. M. KEMP MFG. CO., Dept. C-11
405 E. Oliver St., Baltimore 2, Md.

Gentlemen: Please send me Information Bulletin IE-11.

CARBURETORS
BURNERS
FIRE CHECKS
ATMOSPHERE & INERT GAS GENERATORS
ADSORPTIVE DRYERS
METAL MELTING UNITS
SINGING EQUIPMENT
SPECIAL EQUIPMENT

Name _____
Company _____
Address _____
City _____ Zone _____ State _____



up against it?

When schedules are tight and time is too short for a mill shipment take advantage of Crucible's 23 warehouses... completely stocked to meet your requirements. If you're out of stock, or don't need a mill-sized shipment, Crucible's immediate delivery makes your inventory planning easy.

Let Crucible be your warehouse. Come in to the Crucible warehouse near you. See for yourself the complete stocks, and how well prepared we are to serve you. Be sure to make full use of Crucible's metallurgical service which is freely available to you. CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, New York.

*Complete stocks maintained of
Rex High Speed Steel... AISI Alloy, Machinery, Onyx Spring
and Special Purpose Steels... ALL grades of Tool Steel (in-
cluding Die Casting and Plastic Die Steel, Drill Rod, Tool Bits
and Hollow Drill Steel)... Stainless Steel (Sheets, Bars, Wire,
Billets, Electrodes)*

CRUCIBLE

first name in special purpose steels

WAREHOUSE SERVICE

Branch Offices and Warehouses: ATLANTA • BALTIMORE • BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DENVER
DETROIT • HOUSTON, TEXAS • INDIANAPOLIS • LOS ANGELES • MILWAUKEE • NEWARK • NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH
PROVIDENCE • ROCKFORD • SAN FRANCISCO • SEATTLE • SPRINGFIELD, MASS. • ST. LOUIS • SYRACUSE • TORONTO, ONT. • WASHINGTON, D.C.



\$\$\$\$\$ Saved in Removal of Blast-Furnace Salamander

Oxy-acetylene powder-cutting eliminated a nasty job in one steel mill not long ago. The problem was to remove a salamander in a blast furnace so that the hearth could be replaced without disturbing the upper lining.

After discussing the problem with a LINDE Process Service representative, the company decided to use powder-cutting with an OXWELD C-60 Blowpipe to cut up the salamander.

Only three days were required for the cutting. Production time saved over any other removal method was estimated to be two weeks. \$500,000 worth of iron can be produced in two weeks' time.

Most important from the mill's standpoint was the fact that the upper brickwork was not damaged. Damage from other methods of removing the salamander could run as high as \$300,000 worth of brickwork.

The OXWELD C-60 Blowpipe is specially designed for extra heavy cutting. And when powder-cutting is used refractory oxides are no problem.



Powder-cutting is used for many jobs in addition to the salamander cutting described above. It is ideal for reducing large masses of cast iron.

The terms "Linde," "Oxweld," "Unionmelt," and "Heliarc" are registered trade-marks of Union Carbide and Carbon Corporation or its Units.

What's News

- Of special interest to quarry men is LINDE'S Jet-Piercing blowpipe which can pierce holes to a depth of 5 ft. in hard and abrasive rocks and ores. This economical, speedy method makes blast holes in granite at a rate of 22 to 25 ft. per hour.
- One pipe manufacturer has produced a record seventy miles of 24-in. pipe (12,990 tons) in one month with the help of UNIONMELT welding.
- By using oxy-acetylene flame-cleaning, a foundry has cut the time required to clean slag from the center of their 20-in. castings from about 6 hours to 5 minutes.
- When television inspectors rejected ten thousand tubes because of cracks in the spun chrome steel bases, LINDE engineers showed the tube manufacturer how to make repairs by HELIARC welding. A saving of \$8.00 per tube was accomplished.

LINDE Service Doesn't Cost -- It Pays!

THE LINDE AIR PRODUCTS COMPANY
Unit of Union Carbide and Carbon Corporation
30 East 42nd Street  New York 17, N. Y.
Offices in Other Principal Cities
In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto

"Lost Heat" Reclaimed in 18 Hours

When a full 75-ton heat of steel was recently lost through the bottom of an open-hearth furnace, it was reclaimed in only 18 hours. An OXWELD C-60 Cutting Blowpipe quickly cut the metal to handling size. Using older methods this would have been a three-day task.

Two full days of operating time were saved by returning the furnace to service in 18 hours. Actual cutting time was only five hours.

And the expense? Total cost for materials amounted to not more than \$100.

For further information about powder-cutting or other LINDE processes, call or write our nearest office. We'll be glad to give you more details.



Slag and cinder inclusions are no problem for the C-60 and powder-cutting. Spill sections as thick as 6 ft. have been severed by continuous cutting.

NEW PRODUCTION IDEAS

Continued from Page 119

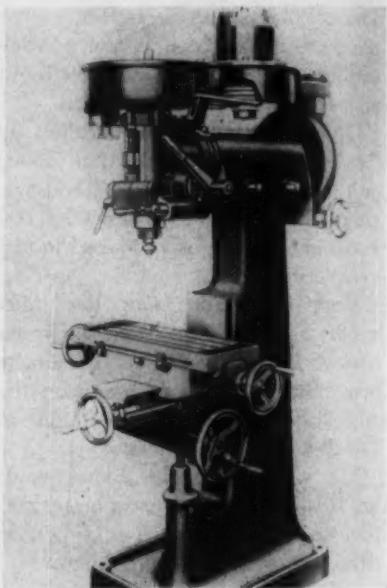
flanged joints, including glass and porcelain flanges, envelope gaskets made of a suitable gasketing material encased in Teflon or gaskets made of solid Teflon are available. *Garlock Packing Co.*

For more data insert No. 30 on postcard, p. 34.

Vertical Milling Machine

Has ten spindle speeds for light milling or die sinking operations.

A new vertical milling and die sinking machine has $25\frac{1}{4} \times 9\frac{3}{8}$ in. overall table dimensions and $17\frac{1}{4}$ in. under the spindle. Power is



from a $\frac{3}{4}$ hp motor by step cone pulley and V belt directly to the spindle. Pushbutton control is provided and coarse and fine feeds to spindle are available. The headstock swivels 90° and there is a sliding adjustment of the complete spindle head. A tracer arm may be used for duplicating work. *DCMT Sales Corp.*

For more data insert No. 31 on postcard, p. 35.

Tube Bending Machine

1000 bends per hr possible on improved air-powered Bend-Ex.

Up to 1000 bends per hr of 1-in. 16 gage steel tubing are possible on the new Bend-Ex, using its new die and clamping head which grips and bends tube automatically. Operation has been simplified to three

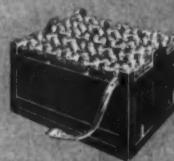
Turn to Page 126

ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES:

They're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle.



EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES



EDISON STORAGE BATTERY DIVISION
of Thomas A. Edison, Incorporated, West Orange, N. J.
In Canada: International Equipment Co., Ltd., Montreal and Toronto



NUT INSERTED DISCS

for

VERSATILE GRINDING WITH ECONOMY

Maximum grinding contact! That's why Simonds Abrasive Company discs give fast, economical production. The side of the disc is used — grinds large areas quicker. Only usable abrasive charged for. Less machine wear — discs give better balance, reduced vibration and less overhang on shaft and bearings.

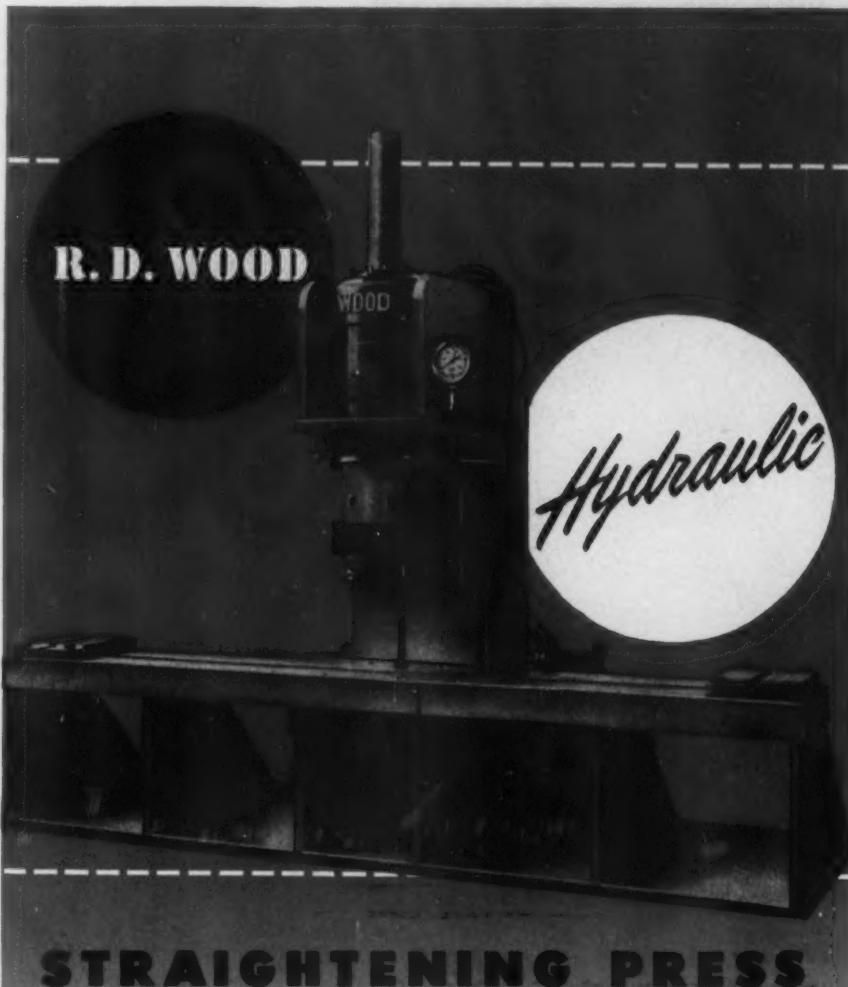
Use these versatile production tools on small parts or large areas up to 300 sq. ins. . . . for grinding metals, ceramics and other materials . . . for surfacing, sharpening, squaring, snagging.

Your Simonds distributor can supply you with discs specially made for Hanchett, Gardner, Besly and similar disc grinders. Let's send you his name together with details on grinding wheels for every purpose, and information on our full line of abrasive grains. Write.



SIMONDS ABRASIVE COMPANY, PHILADELPHIA 37, PA., DISTRIBUTORS IN PRINCIPAL CITIES

DIVISION OF SIMONDS SAW AND STEEL CO., FITCHBURG, MASS. OTHER SIMONDS COMPANIES: SIMONDS SAW CO., LTD., WELLSVILLE, N.Y.; SIMONDS CANADA SAW CO., LTD., MONTREAL, QUE. AND SIMONDS CANADA ABRASIVE CO., LTD., ARVIDIA, QUE.



STRAIGHTENING PRESS

For straightening operations on bars, shafts, tubes, and similar pieces, this 100-ton vertical hydraulic open-gap straightening press does an efficient job. Its working table, measuring $22\frac{1}{4}'' \times 12' 4''$, is supplied with two bases in machined grooves for the assembly of dies or anvil blocks. The bases are moved easily in 6" increments any required distance either side of center. The ram head is grooved for die attachment.

Powered by a rear-mounted, compact two-pressure pumping unit, the press has a 12" main ram stroke, and stands 10' high. Daylight is $26\frac{1}{2}''$.

Write today for complete information on this efficient, well-constructed press.

HYDRAULIC PRESSES AND VALVES



EST. 1803

R.D. Wood Company

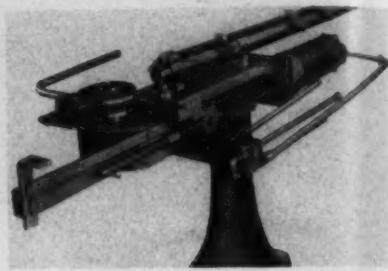
PUBLIC Ledger Building, Philadelphia, Pa.

INTENSIFIERS

NEW PRODUCTION IDEAS

Continued from Page 122

quick steps. The machine is adaptable to all bending—round, square, and rectangular tubing, pipe, light angles, channels, solid bars, etc.



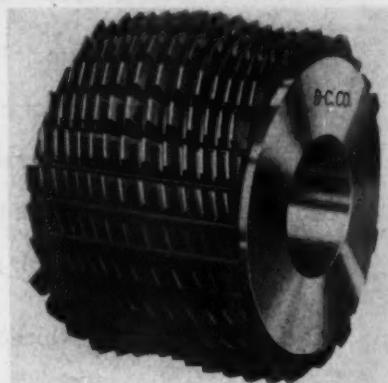
Interchangeable dies for different tubing diameters and radii are easily and quickly attached. *Paul Machine Tool & Die Works*.

For more data insert No. 32 on postcard, p. 35.

Elliptical Gear Hob

Standard machine using a special form hob can cut elliptical gears.

The hob has a number of leads equal to one-half the number of teeth in the gear, each lead cutting two diametrically opposite teeth. Since the teeth are designed from a base ellipse, the involute curves on opposite sides of the same tooth



are not similar. Each thread on the hob differs from each other thread. The hob is toping so that the gears can be cut from bar stock, eliminating the necessity of locating the hob with respect to the work. It is stated that these true involute teeth designed from a base ellipse produce the best possible rolling action. Gears can be cut for applications where a constantly varying speed ratio or a quick-return ratio are desired. *Barber-Colman Co.*

For more data insert No. 33 on postcard, p. 35.

THE IRON AGE

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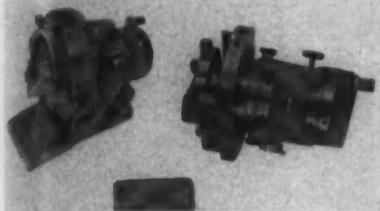
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Grinding Attachment

Features unlimited off center work, one setup grinding of eccentrics.

A new precision grinding fixture, the Starce Sine-A-Dex, has a face plate with a V block that can be set off center in both directions permitting the grinding of such items



as rectangular punches requiring a radius on each corner. Two setting rings with finely cut verniers provide the fixture with a rapid and accurate means of setting included angles to any number of degrees on either side of any reference line. The fixture is lightweight, small in size and easily handled. *Star Gauge Co.*

For more data insert No. 34 on postcard, p. 35.

Band Saw Blade Welder

Welds 0.050-in. diam contour-cutting band saw blades and 1/2-in. flat types.

The welder is fully automatic, with simplified controls assuring



uniform results. A built-in grinder removes flash from the weld. A gage checks thickness of weld on flat saws. The unit is housed in a welded steel case. All-over dimensions are 7 3/4 x 12 x 7 in. *Brennen Mfg. Co.*

For more data insert No. 35 on postcard, p. 35.

Portable Conveyer

Two conveyers in one: standard length and extreme length units.

The new Adjustovveyor handles packages and any material that

IMPROVED APPEARANCE!
BETTER PERFORMANCE!
COSTS REDUCED 25%

BEFORE:
A WELDMENT

NOW:
A UNITCASTING

R
easons why
another

COUPLER HOUSING switched to UNITCASTINGS!

This warehouse trailer coupler housing is subjected to considerable stress and strain in handling materials for general factory use. As a weldment, it not only used 40 inches of welding, slowing down unit production, but lacked eye appeal.

After the switch to Unitcastings, production costs dropped 25%, trailer performance improved, a streamlined appearance added more "saleability" to the product... and with an eye to future repeat orders, Unitcastings created better customer relationships. To build quality into your own product, trust it to UNITCASTINGS—they're better.

UNITCAST



QUALITY STEEL CASTINGS

Give us a chance to offer a "cast steel" answer for your parts problem. Our suggestions while your product is in the design stage will pay continuous dividends. Write or call today. Unitcast Corporation, Steel Casting Division, Toledo 9, Ohio. In Canada: Canadian-Unitcast Steel, Ltd., Sherbrooke, Quebec.

UNITCASTINGS ARE FOUNDRY ENGINEERED

PAGE WIRE

LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON

ROUND
FLAT
OR
SHAPED

You draw the Shape
—Page can draw the Wire

—the way you want it for your production—whether it's ALL of your product, or only a part.

Cross-sectional areas up to .250" square; widths to $\frac{1}{2}$ "; width-to-thickness ratio not exceeding 6 to 1.

for Wire or
Information about Wire—

Get in touch
with Page!

Monessen, Pa., Atlanta, Chicago,
Denver, Detroit, Los Angeles, New York,
Philadelphia, Portland,
San Francisco, Bridgeport, Conn.

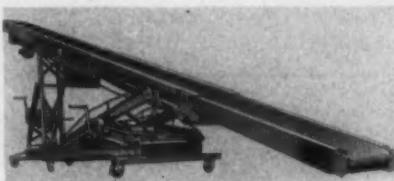


PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

NEW PRODUCTION IDEAS

Continued

can be placed upon a moving belt. With 10 different positions for various applications, it is suited for low and high operations, for elevating between floors and for stacking in piles. By means of the withdrawing boom, Adjustovveyor



can go over aisleways and yet permit passage of other equipment. The boom is controlled by separate power, giving rapid opening and closing without interfering with material being conveyed. The conveyors are made in a complete range of lengths, and carry full loads over the entire length, including the boom when fully extended. *Stewart-Glapat Corp.*

For more data insert No. 36 on postcard, p. 35.

Concrete Saws

Make straight, smooth cuts with speed and ease, finished edges.

Clipper saws cut concrete or asphalt flooring for expansion joints or patchwork for repairs, providing finished edges for concrete pouring and limiting radial

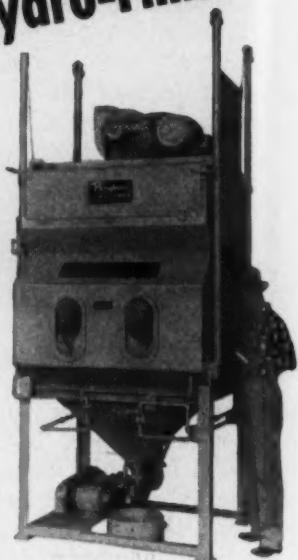


fracturing when breaking. Two models are gasoline powered and counter balanced to "turn on a dime." Other models have electric motors. Features include: Floating three point suspension which eliminates blade binding, and positive screw feed. *Clipper Mfg. Co.*

For more data insert No. 37 on postcard, p. 35.

Resume Your Reading on Page 39

PANGBORN Hydro-Finish



gives you...

- Better Paint Jobs
- Better Electroplating
- Better Finishing
- Better Products

Slash finishing costs to rock-bottom in your plant! Amazing Pangborn Hydro-Finish cleans far faster than hand methods, yet holds tolerances to .0001". Hydro-Finish cannot harm your product's sharp edges or corners, forms a perfect "tooth" for non-peel electroplating, finishing or painting.

Hydro-Finish makes threaded pieces turn easily... forms millions of little "oil pockets" in lubricated pieces to prolong product life. Fatigue failure is reduced because Hydro-Finish removes or blends grinding lines, etc!

Hydro-Finish is also valuable in your tool room—cleans production tools and dies in a fraction of the time needed for expensive hand cleaning.

WRITE TODAY for Bulletin 1400-L. Contains full facts on Pangborn Hydro-Finish and Pangbornite Abrasive. For your free copy, address: PANGBORN CORPORATION, 1500 Pangborn Blvd., Hagerstown, Maryland.

Pangborn

BLAST CLEANS CHEAPER
with the right equipment
for every job

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November

MARKET

IRON AGE

FOUNDED 1855

MARKETS & PRICES

Briefs and Bulletins

inequity—Requirements for nuts, bolts, rivets and other fasteners for the freight car program are putting the squeeze on fastener producers. While meeting the needs of the freight car builders, they can't get compensating tonnages of bars from steel producers. This is one of the inequities of the NPA program. No provision has been made for a situation of this kind. On DO orders, of course, the fabricator can in turn serve it on his steel supplier.

sheets extra changes—Effective Nov. 11, Jones & Laughlin Steel Corp. made the following extra changes on hot and cold-rolled sheets: Packaging extras up an average of \$1 to \$2 a ton; quantity extras up 50¢ to \$1.50 per ton and a new quantity extra of \$3 per ton for under 20,000 lb to 10,000 lb; specific and restricted test extras up \$2 a ton; resquaring extra, was 10 pct, now 15 pct; stretcher leveler extra, formerly ranged from 50¢ to 75¢ per 100 lb, is now 75¢ on all gages. Length and special oiling and greasing extras were also revised.

ferromanganese—Higher costs for ore and ocean transportation are given as reasons for the first price-hike in a year and a half in ferromanganese, up \$13 a ton to \$185, announced by E. J. Lavino & Co., Philadelphia, effective Nov. 3. Bethlehem Steel Co. has raised the price of standard lump ferromanganese \$13 a gross ton, to set the f.o.b. Johnstown, Pa., price at \$187, effective Nov. 7.

steel record—Production records fell last week at the Gary works of Carnegie-Illinois Steel Corp. Weekly ingot output totaled 120,275 tons. The former record of 119,386 was established during the week of April 8 of this year. On the primary mills a new hot-rolled record was set with 98,826 tons being rolled. The previous high was 97,599 tons rolled during the week of April 29.

steel wage boost—Timken Roller Bearing Co. and United Steelworkers of America have agreed on a 10 pct wage boost. This is the first agreement between the union and a steel producer since the union asked that wage talks be opened ahead of time. The 10 pct increase will be equivalent to an average of about 16.4¢ an hour for Timken workers.

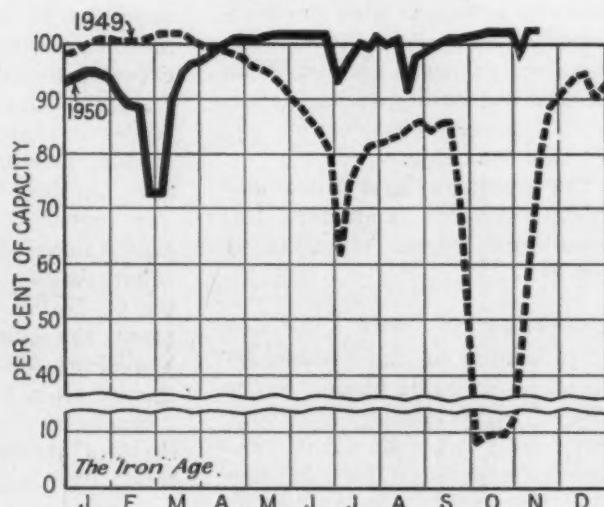
steel rail—Orders for 101,300 tons of new steel rail and for rail joint bars costing about \$7,700,000 have been placed by New York Central System with Carnegie-Illinois Steel Corp., Bethlehem Steel Co., and Inland Steel Co.

ferro-alloy prices—Increases in ferro-alloy prices announced by Electric Metallurgical Div. of Union Carbide and Carbon Corp., include: high-carbon ferrochrome, up 1 1/4¢; low-carbon ferrochrome, up 1 1/2¢; ferrosilicons, up 1/2 to 1¢; silicon briquets, up 0.6¢; standard ferromanganese, up \$13 a gross ton; medium and low-carbon ferromanganese, up 1¢; silicomanganese, up 0.65¢; silicomanganese briquets, up 0.55¢; 12 to 15 pct zirconium alloy, up 0.4¢; ferrovanadium, up 10¢. Quantity, packing and sizing differentials remain unchanged.

correction—Pig iron prices at Cleveland were incorrectly quoted last week. American Steel & Wire Co. did raise prices \$3 a ton, but this only brought their price to the level being charged by other producers.

full quota—DO requirements for hot-rolled sheets appear to be heavier than was anticipated. One large mill in the Pittsburgh district has already booked its 5 pct through the first quarter.

Steel Operations**



District Operating Rates—Per Cent of Capacity**

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	Birmingham	South	St. Louis	East	Aggregate
Nov. 8	102.0*	105.5*	94.0	98.0	103.5	89.0	97.0	104.0*	105.0	106.0	95.0	91.5	112.5	103.0*
Nov. 12	100.0	103.5	94.5	99.0	101.0	104.0	100.0	103.0	104.0	106.0	98.5	91.5	112.0	103.0

* Revised.

** Steel operations for the first half of 1950 are based on annual capacity of 99,392,000 net tons. Beginning July 1, 1950, operations are based on new annual capacity of 100,583,500 net tons.

Nonferrous Metals OUTLOOK

Market Activities

New York—Last week ended with a definite weakening in the scrap metals market. While quoted prices were unchanged this week, the general tone of the market is much softer.

Some of the "unofficial" prices for scrap copper dropped a few cents, though they are still higher than THE IRON AGE quotations. This is a reflection of a decrease in conversion buying and, unless there is renewed activity in this phase of the market, dealers' buying prices are almost certainly going to decline in the near future.

So far, all offerings of copper have been taken and this will probably continue to be the case. Everyone is selling copper as rapidly as possible because nobody wants to be caught with any high-priced inventory on hand when these prices begin to slip. With demand continuing at its present level, however, the decline will not be a landslide.

The secondary ingot field is also quiet with both aluminum and brass ingot makers reporting no change.

Speculation and Panic

Speculators on the London exchange, plus panic buying in the face of international uneasiness, particularly in Indo-China, was largely responsible for the agitated tin market. On Wednesday of last week, the New York price of tin for prompt delivery soared to \$1.63 and then declined to a closing figure of \$1.55. Following that was a decline as fantastic as the increases which preceded it.

The market was so entirely out of hand that people in the trade refused to make any comment about the future possibilities.

Metals market pressure eases as tin dives and converters slow down . . . Scrap price decline seen as possibility . . . Antimony supply getting tighter.

Even wild guesses seemed conservative when they were compared with what actually happened.

Supply of antimony and its ore are getting shorter and the market for this metal is tightening. The 1¢ increase in import duty, which is due next month, is expected to increase the price of foreign metal by 1¢ per lb, but the domestic price of 32¢ per lb is not expected to move.

Applications for zinc export licenses are about twice as large as the fourth quarter quota of 6500 tons set by the government. The copper export quota was recently amended by the addition of sub-quotas according to the country of destination. As we go to press, the question of a similar breakdown for zinc is awaiting an answer from Washington.

Smelters' stocks of slab zinc at the end of October totaled 9108 tons. This is a decrease of 1159

tons from the 10,267 tons on hand at the end of the previous month, according to the monthly report of the American Zinc Institute, Inc. Also reported were unfilled orders of 64,436 tons at the end of the month compared to 69,062 tons at the beginning of October. Shipments throughout the month added up to 81,156 tons, up from the previous month's 75,241-ton total.

Conversion Is Excluded

The National Production Authority's 35 pct cutback order (see page 104) does not apply to production or conversion of metal but it does apply to purchased scrap. Precisely what this will mean to industry is not yet clear, but it is hoped that the decreased civilian supply will not give rise to a conversion market as wild as those found in steel and copper today.

NONFERROUS METALS PRICES

	Nov. 8	Nov. 9	Nov. 10	Nov. 11	Nov. 12	Nov. 13
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake, delivered	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.55	\$1.55	\$1.55	....	\$1.55	\$1.55
Zinc, East St. Louis	17.50	17.50	17.50	17.50	17.50	17.50
Lead, St. Louis	16.90	16.90	16.90	16.90	16.90	16.90

Note: Quotations are going prices.

**Tentative.*

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 30.1¢; 4S, 1S.2¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 1S-O, 75S-OAL, 39.4¢; 0.051 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 41.4¢; 75S-O, 75S-OAL, 41.5¢; 0.082 in., 2S, 3S, 32.4¢; 4S, 61S-O, 37.1¢; 52S, 39.8¢; 24S-O, 24S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.
Extruded Solid Shapes: Shape factors 1 to 5, 3.2¢ to 74.5¢; 12 to 14, 36.9¢ to 90¢; 24 to 32, 39.6¢ to 51.1¢; 36 to 38, 47.2¢ to \$1.70.
Red. Rolled: 1.5 to 4.5 in., 2S-F, 2S-F, 37.5¢ to 33.5¢; cold-finished, 0.375 to 3 in., 2S-F, 3S-F, 40.4¢ to 25¢.
Screw Machine Stock: Rounds, 11S-T3, 3¢ to 11/32 in., 53.5¢ to 42¢; 1/2 in., 41.5¢ to 39¢; 1 1/16 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 5000 lb.
Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 31.4¢ to 29¢; 52S, 48¢ to 35¢; 56S, 51¢ to 47¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 37¢; 75S-T6, 84¢ to 67.5¢.
Extruded Tubing, Rounds: 63S-T5, OD in.: 1 1/2 to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 6 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.
Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., \$1.142; 96 in., \$1.522; 120 in., \$1.902; 144 in., \$2.284. Gage 0.024 in. x 28 in., 72 in., \$1.379; 96 in., \$1.889; 120 in., \$2.299; 144 in., \$2.759. Coiled Sheet: 0.019 in. x 28 in., 28.2¢ per lb; 0.024 in. x 28 in., 26.9¢ per lb.

Magnesium

(F.o.b. mill, freight allowed)

Sheet and Plate: FS1-O, 1/4 in., 68¢; 3/16 in., 64¢; 5/32 in., 67¢; B & S Gage 10, 68¢; 12, 72¢; 14, 76¢; 16, 85¢; 18, 93¢; 20, \$1.05; 22, \$1.27; 24, \$1.47. Specification grade higher. Base: 30,000 lb.
Extruded Round Rod: M, diam in., 1/4 to 0.311 in., 74¢; 1/2 to 1 in., 57.5¢; 1/4 to 1.749 in., 53¢; 2 1/2 to 5 in., 48.5¢. Other alloys higher. Base: Up to 1/4 in. diam, 10,000 lb; 1/2 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 8.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.8¢; 0.50 to 0.59 lb, 8.6 in., 64.7¢; 1.8 to 2.59 lb, 19.5 in., 53.3¢; 4 to 6 lb, 23 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.
Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.067, 1/4 in. to 6 1/16 in., \$1.40; 5/16 to 3/4 in., \$1.26; 3/4 to 1/2 in., 76¢; 0.195 to 0.219, 5¢ to 6.6¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in. in.: Up to 1/2 in., 10,000 lb; 1 1/2 in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Titanium

(10,000 base, f.o.b. mill)

Commercially pure and alloy grades: Sheet and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

Nickel and Monel

(Base prices, f.o.b. mill)

"A" Nickel Monel		
Sheets, cold-rolled	69	53
Strip, cold-rolled	75	56
Bars and bars	65	51
Angles, hot-rolled	65	51
Plates	67	52
Seamless tubes	98	86
Shot and blocks	46	

Copper, Brass, Bronze

(Freight prepaid on 200 lb includes duty)

	Sheets	Rods	Extruded Shapes
Copper	41.03	36.88	40.63
Copper, h-r	38.18		
Copper, drawn	39.15	38.84	
Low brass	38.28	37.97	
Yellow brass	40.14	39.83	
Red brass	43.08	38.61	38.07
Naval brass	32.63	36.70	
Leaded brass	41.13	40.82	
Com'l bronze	40.43	40.65	41.41
Mang. bronze	45.96	40.65	
Phos. bronze	60.20	60.45	
Muntz metal	40.43	36.74	37.99
NI silver, 10 pct	49.27	51.49	
Arch. bronze	51.49		35.11

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	19.00
Aluminum pig	18.00
Antimony, American, Laredo, Tex.	32.00
Beryllium metal, 95%, lumps, beads	\$65.00
Beryllium copper, 3.75-4.25% Be, dollars per lb contained Be	\$30.00
Beryllium aluminum 5% Be, dollars per lb contained Be	\$65.00
Bismuth, ton lots	\$2.25
Cadmium, del'd	\$2.40
Cobalt, 97-99% (per lb)	\$1.80 to \$1.87
Copper, electro, Conn. Valley	24.50
Copper, Lake, delivered	24.625
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 93.8%, dollars per troy oz.	\$2.25
Iridium, dollars per troy oz.	\$200
Lead, St. Louis	16.80
Lead, New York	17.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	24.50
Magnesium, sticks, 100 to 500 lb	42.00 to 44.00
Mercury, dollars per 76-lb flask	
f.o.b. New York	\$92.50 to \$95.00
Nickel, electro, f.o.b. New York	51.22
Nickel oxide sinter, f.o.b. Copper Cliff, Ont., contained nickel	44.25
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$90 to \$93
Silver, New York, cents per oz.	80.00
Tin, New York	\$1.38
Titanium, sponge	\$5.00
Zinc, East St. Louis	17.50
Zinc, New York	18.22
Zirconium copper, 50 pct	\$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot	
No. 115	29.00
No. 120	28.50
No. 123	28.00
80-10-10 ingot	
No. 305	35.00
No. 315	32.00
88-10-2 ingot	
No. 210	47.50
No. 215	44.50
No. 245	37.00
Yellow ingot	
No. 405	25.50
Manganese bronze	
No. 421	32.75

Aluminum Ingot

(Cents per lb, 30,000 lb lots)

95-5 aluminum-silicon alloys	32.75-33.25
0.30 copper, max.	32.50-33.00
0.60 copper, max.	32.50-33.00
Piston alloys (No. 122 type)	29.75-30.25
No. 12 alum. (No. 2 grade)	29.50-29.75
108 alloy	30.00-30.25
195 alloy	31.25-31.50
13 alloy	32.50-33.00
AXS-679	30.00-30.25

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 1/2%	31.00-31.50
Grade 2—92-95%	29.50-29.75
Grade 3—90-92%	29.00-29.25
Grade 4—85-90%	28.50-28.75

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	39 1/2
Electrodeposited	23 1/2
Rolled, oval, straight, delivered	23 1/2
Forged ball anodes	43
Brass, 80-20	
Cast, oval, 15 in. or longer	34 1/2
Zinc, oval	26 1/2
Ball anodes	25 1/2
Nickel 99 pct plus	
Cast	68.00
Rolled, depolarized	69.00
Cadmium	\$2.65
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79 1/2
Chemicals	
(Cents per lb, f.o.b. shipping point)	
Copper cyanide, 100 lb drum	52.15
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt allowed	20 1/2
Nickel chloride, 375 lb drum	27 1/2
Silver cyanide, 100 oz lots, per oz	61 1/2
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drums	45.85

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1/2¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

Turn- Heavy ings	
Copper	23
Yellow brass	20 1/2
Red brass	21 1/2
Comm. bronze	21 1/2
Mang. bronze	19 1/2
Brass rod ends	19 1/2

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	31.75
No. 2 copper wire	20.75
Light copper	19.75
No. 1 composition	22.50
No. 1 comp. turnings	22.00
Rolled brass	19.00
Brass pipe	21.00
Radiators	17.75
Heavy yellow brass	17.50

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	21.75
No. 2 copper wire	20.75
Light copper	19.75
No. 1 composition	22.50
No. 1 comp. turnings	22.00
Rolled brass	19.00
Brass pipe	21.00
Radiators	17.75
Heavy yellow brass	17.50

Aluminum

(Alum. pistons and struts

11 1/2	12
14 1/2	15
18	15 1/2
22	25
26	28

Copper and Brass

(No. 1 heavy copper and wire

24 1/2	25

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MARKETS—PRICES—TRENDS



SCRAP

Iron & Steel

Consumers Hold Formula Price Line

In Pittsburgh and other centers, the big consumers have kept the yoke on prices of heavy melting grades. Reports of upgrading and low quality of scrap at formula were still coming in. No concrete evidence was offered in Chicago to show that major consumers have paid above formula prices for scrap—but some brokers were willing to pay as much as \$2 above formula for No. 1 heavy to fill old orders.

Last week **THE IRON AGE** reported a \$44 top for No. 1 heavy in Philadelphia. It was substantiated then but this week sales at that level had dropped off and necessitated a return to the formula basis. Sign of the times is that some in the Philadelphia area have adopted a name for some of the poor-quality material coming in—"Formula No. 1."

The Detroit formula for open-hearth scrap held this week but pressure continued to build for conversion scrap—which is now accounting for an estimated 30 pct of the auto industry's steel needs. Major consumers still held control with the formula in Cleveland and the Valley. The market has been rocked—but it has held.

PITTSBURGH—Big consumers retained tight control of the heavy melting grades. Exception was No. 1 bundles which continue to command a premium. Short turnings were bought at formula. What little No. 1 heavy melting one consumer could get at the formula was of poor quality. He said he was paying the formula of \$46.50 for "low phos" which wasn't low phos—merely a good grade of No. 1. The low phos market was all over the map. As much as \$60 has been offered for crop ends. Some has moved at \$56, some at \$48.50, etc. It averages out to about \$54. Scrap rails and cast were stronger.

CHICAGO—As yet there has been no evidence that major consumers in the area have paid above formula prices for scrap. Some brokers meanwhile have offered as much as \$2 over formula for No. 1 heavy melting steel to fill old orders. Upgrading is common. Rumors have it that outlying mills are breaking the formula. The question is whether local mills can keep to the formula in face of the pressure building up under the Chicago market and other areas breaking away from formula prices. Cast grades and railroad items continue strong.

PHILADELPHIA—Buying at the \$44 level for No. 1 heavy melting steel has dropped off this week to a relatively small quantity with the result that **THE IRON AGE** is again quoting on the formula basis. There are continued reports of upgrading to the extent that many people feel the relaxed inspection of scrap will harm both dealers and consumers. "Formula No. 1" is the name being applied to some of the poor-quality material. Cast grades are strong.

NEW YORK—The market here showed about the same activity as last week,

Some were satisfied with the scrap movement. The turnings group was stronger and advanced 50¢ at the top. The cast group was strong-as-usual and moved to a new ceiling of \$48.50. Very little No. 1 heavy melting can be purchased at formula prices.

DETROIT—While formula prices continue to hold in this area so far as open-hearth scrap is concerned, pressures continue to rise for free scrap needed for conversion which is now estimated to account for over 30 pct of the auto industry's steel requirements. Further evidence that strong efforts are being made to retain the formula are persistent reports that scrap from small industrial plants is now being directed back to mills. There are also reports that mill contacts with scrap dealers are being increased. Cast grades continue strong but prices are unchanged.

CLEVELAND—Major consumers were still in command with formula prices here and in the Valley at press time. Big reason for this may be that they have unofficial allegiance of small mills and converters in this district. Shipments have dropped and breakthroughs in other districts have rocked the market but the mills have held. Rumor has it one major broker is buying dealer tonnage at prices well above the formula on the assumption that if price controls are not slapped on the market. The formula will break.

ST. LOUIS—Heavy demand for standard steel RR axles from manufacturers who use billets, of which there is a short supply, has pushed that price to the highest place in several years, \$85 to \$90 and it is understood some sales have been made at even higher prices. The price of No. 2 bundled sheets has been advanced \$1 to conform to No. 2 heavy melting steel. Steel mills continue to hold to the formula but brokers are paying more to get the material.

CINCINNATI—District consumers are clinging to the formula in a hysterical market here. Dealers are selling only small tonnages and despite rumors of government controls and roll backs, are waiting for the formula to blow. Brokers are not anxious to take any new orders. Reports of upgrading, acceptance of No. 1 RR heavy melting as low phos, are adding to the confusion.

BOSTON—With activity in the market fairly brisk, No. 1 heavy melting held at its formula price. It has been at this level for about 2 months now. Cast is moving pretty well and No. 1 busheling seems to have risen to a formula price of \$34.92. Mixed borings and turnings and shoveling turnings advanced 50¢.

BIRMINGHAM—The scrap market has been quiet this week. A little more scrap has been moving into the district, but most of it is needed to fill orders. No. 1 cupola cast advanced another \$3 to \$5. Rails 2 feet and under advanced to \$65.

BUFFALO—Prices on cast scrap advanced \$2.50 to \$3 a ton on sales of No. 1 cupola within range of \$49 to \$50 business was reported to one of the leading consumers of this item. While top mill buyers were still adhering to the formula ranges on steelmaking items, additional business was reported at a higher price to a smaller consumer.



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Iron and Steel

SCRAP PRICES

Pittsburgh

No. 1 hvy. melting	\$43.50 to \$44.00
No. 2 hvy. melting	40.50 to 41.00
No. 1 bundles	46.00 to 46.50
No. 2 bundles	38.50 to 39.00
Machine shop turn.	34.50 to 35.00
Mixed bor. and ms. turna.	34.50 to 35.00
Shoveling turnings	37.50 to 38.00
Cast iron borings	37.00 to 37.50
Low phos. plate	53.50 to 54.00
Heavy turnings	46.00 to 46.50
No. 1 RR. hvy. melting	44.00 to 45.00
Scrap rails, random lgth.	63.00 to 63.50
Rails 2 ft and under	67.00 to 68.00
RR. steel wheels	59.00 to 60.00
RR. spring steel	59.00 to 60.00
RR. couplers and knuckles	59.00 to 60.00
No. 1 machinery cast	60.50 to 61.00
Mixed yard cast	54.50 to 55.00
Heavy breakable cast	51.50 to 52.00
Malleable	68.00 to 69.00

Chicago

No. 1 hvy. melting	\$39.50 to \$40.00
No. 2 hvy. melting	27.50 to 38.00
No. 1 factory bundles	39.50 to 40.00
No. 1 dealers' bundles	39.50 to 40.00
No. 2 dealers' bundles	24.00 to 25.00
Machine shop turn.	23.00 to 34.00
Mixed bor. and turn.	33.00 to 34.00
Shoveling turnings	34.50 to 35.50
Cast iron borings	33.00 to 34.00
Low phos. forge crops	54.00 to 55.00
Low phos. plate	52.00 to 53.00
No. 1 RR. hvy. melting	46.50 to 47.50
Scrap rails, random lgth.	59.00 to 60.00
Rerolling rails	65.00 to 66.00
Rails 2 ft and under	65.50 to 66.50
Locomotive tires, cut	57.00 to 58.00
Cut bolsters & side frames	54.00 to 55.00
Angles and splice bars	62.00 to 63.00
RR. steel car axles	92.00 to 93.00
RR. couplers and knuckles	57.00 to 58.00
No. 1 machinery cast	60.00 to 61.00
No. 1 agricul. cast	55.00 to 56.00
Heavy breakable cast	50.00 to 51.00
RR. grate bars	46.00 to 47.00
Cast iron brake shoes	48.50 to 49.50
Cast iron car wheels	56.00 to 57.00
Malleable	69.00 to 70.00

Philadelphia

No. 1 hvy. melting	\$38.50 to \$39.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 bundles	38.50 to 39.00
No. 2 bundles	31.00 to 32.00
Machine shop turn.	29.00 to 30.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	32.00 to 33.00
Low phos. punchings, plate	49.00 to 50.00
Low phos. 5 ft and under	48.00 to 49.00
Low phos. bundles	45.00 to 46.00
Hvy. axle forge turn.	38.50 to 39.00
Clean cast chem. borings	39.00 to 40.00
RR. steel wheels	51.00 to 52.00
RR. spring steel	51.00 to 52.00
Rails 18 in. and under	66.00 to 67.00
No. 1 machinery cast	55.00 to 56.00
Mixed yard cast	49.00 to 51.00
Heavy breakable cast	49.00 to 50.00
Cast iron carwheels	58.00 to 60.00
Malleable	64.00 to 65.00

Cleveland

No. 1 hvy. melting	\$43.00 to \$43.50
No. 2 hvy. melting	40.00 to 40.50
No. 1 busheling	43.00 to 43.50
No. 1 bundles	43.00 to 43.50
No. 2 bundles	28.00 to 28.50
Machine shop turn.	35.00 to 35.50
Mixed bor. and turn.	36.00 to 36.50
Shoveling turnings	37.00 to 37.50
Cast iron borings	37.00 to 37.50
Low phos. 2 ft and under	45.50 to 46.00
Steel axle turn.	43.00 to 43.50
Drop forge flashings	43.00 to 43.50
No. 1 RR. hvy. melting	43.50 to 44.00
Rails 3 ft and under	67.50 to 68.00
Rails 18 in. and under	68.50 to 69.00
No. 1 machinery cast	63.00 to 64.00
RR. cast.	64.50 to 65.00
RR. grate bars	46.00 to 47.00
Stove plate	51.00 to 52.00
Malleable	69.00 to 70.00

Youngstown

No. 1 hvy. melting	\$43.50 to \$44.00
No. 2 hvy. melting	40.50 to 41.00
No. 1 bundles	43.50 to 44.00

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

No. 2 bundles	\$38.50 to \$39.00
Machine shop turn.	35.50 to 36.00
Shoveling turnings	37.50 to 38.00
Cast iron borings	37.50 to 38.00
Low phos. plate	46.00 to 46.50

Buffalo

No. 1 hvy. melting	\$41.00 to \$42.00
No. 2 hvy. melting	27.50 to 38.50
No. 1 busheling	37.50 to 38.50
No. 1 bundles	39.50 to 40.00
No. 2 bundles	36.00 to 36.50
Machine shop turn.	32.00 to 33.00
Mixed bor. and turn.	35.00 to 36.00
Shoveling turnings	35.00 to 36.00
Cast iron borings	35.00 to 36.00
Low phos. plate	46.00 to 47.00
Scrap rails, random lgth.	52.00 to 53.00
Rails 2 ft and under	59.00 to 61.00
RR. steel wheels	52.00 to 53.00
RR. spring steel	52.00 to 53.00
RR. couplers and knuckles	52.00 to 53.00
No. 1 machinery cast	52.00 to 54.00
No. 1 cupola cast	49.00 to 50.00
Small indus. malleable	60.00 to 62.00

Birmingham

No. 1 hvy. melting	\$37.00 to \$38.00
No. 2 hvy. melting	33.00 to 34.00
No. 2 bundles	\$31.00 to \$32.00
No. 1 busheling	35.50 to 36.50
Machine shop turn.	28.00 to 29.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	25.00 to 26.00
Bar crops and plate	44.00 to 45.00
Structural and plate	44.00 to 45.00
No. 1 RR. hvy. melting	41.00 to 42.00
Scrap rails, random lgth.	55.00 to 56.00
Rerolling rails	59.00 to 60.00
Rails 2 ft and under	64.00 to 65.00
Angles & splice bars	57.00 to 58.00
Std. steel axles	61.00 to 62.00
No. 1 cupola cast	58.00 to 59.00
Stove plate	53.00 to 54.00
Cast iron carwheels	46.00 to 47.00

St. Louis

No. 1 hvy. melting	\$42.00 to \$43.00
No. 2 hvy. melting	36.00 to 37.00
No. 2 bundled sheets	36.00 to 37.00
Machine shop turn.	28.50 to 29.50
Shoveling turnings	32.00 to 33.00
Rails, random lengths	55.00 to 57.00
Rails 3 ft and under	63.00 to 65.00
Locomotive tires, uncut	53.00 to 54.00
Angles & splice bars	56.00 to 58.00
Std. steel car axles	85.00 to 90.00
RR. spring steel	55.00 to 57.00
No. 1 machinery cast	55.00 to 57.00
Hvy. breakable cast	45.00 to 47.00
Cast iron brake shoes	46.00 to 48.00
Stove plate	44.00 to 45.00
Cast iron car wheels	56.00 to 58.00
Malleable	65.00 to 66.00

New York

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$34.50
No. 2 hvy. melting	\$29.00 to 30.00
No. 2 bundles	28.50 to 29.00
Machine shop turn.	25.50 to 26.00
Mixed bor. and turn.	25.50 to 26.00
Shoveling turnings	27.50 to 28.00
Clean cast chem. bor.	34.50 to 35.50
No. 1 machinery cast	48.00 to 48.50
Mixed yard cast	42.00 to 44.00
Charging box cast	43.00 to 44.00
Heavy breakable cast	43.00 to 44.00
Unstrp. motor blocks	38.00 to 39.00
No. 1 hvy. melting	\$32.50
No. 2 hvy. melting	\$29.00 to 29.50
No. 1 bundles	32.50

Boston

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$32.50
No. 2 hvy. melting	\$29.00 to 29.50
No. 1 bundles	32.50

No. 2 bundles	\$28.00 to \$29.00
Machine shop turn.	24.00 to 24.50
Mixed bor. and turn.	24.00 to 24.50
Shoveling turnings	26.00 to 26.50
No. 1 busheling	34.92
Clean cast chem. borings	29.00 to 30.00
No. 1 machinery cast	46.00 to 47.00
Mixed cupola cast	42.00 to 43.00
Heavy breakable cast	38.00 to 39.00
Stove plate	41.00 to 41.50

Detroit

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$37.50 to \$38.50
No. 2 hvy. melting	32.50 to 36.00
No. 1 bundles	37.50 to 42.00
New busheling	37.50 to 42.00
Flashings	37.00 to 37.50
Machine shop turn.	29.00 to 29.50
Mixed bor. and turn.	29.00 to 29.50
Shoveling turnings	31.50 to 34.00
Cast iron borings	31.50 to 34.00
Low phos. plate	40.00 to 42.00
No. 1 cupola cast	60.00 to 61.00
Heavy breakable cast	51.00 to 51.50
Stove plate	51.00 to 52.00
Automotive cast	64.00 to 65.00

Cincinnati

Per gross ton, f.o.b. cars:	
No. 1 hvy. melting	\$42.00 to \$42.50
No. 2 hvy. melting	39.00 to 39.50
No. 1 bundles	42.00 to 42.50
No. 2 bundles, black	39.00 to 39.50
No. 2 bundles, mixed	32.50 to 33.00
Machine shop turn.	28.50 to 29.00
Mixed bor. and turn.	30.50 to 31.00
Shoveling turnings	31.50 to 32.00
Cast iron borings	31.50 to 32.00
Low phos. 18 in. under	55.00 to 56.00
Rails, random lengths	62.00 to 63.00
Rails, 18 in. and under	69.00 to 70.00
No. 1 cupola cast	64.00 to 65.00
Hvy. breakable cast	51.00 to 52.00
Drop broken cast	66.00 to 67.00

San Francisco

No. 1 hvy. melting	\$26.50
No. 2 hvy. melting	24.50
No. 1 bundles	26.50
No. 2 bundles	22.50
No. 3 bundles	19.50
Machine shop turn.	13.00
Elec. fur. 1 ft and under	40.00
No. 1 RR. hvy. melting	26.50
Scrap rails, random lgth.	26.50

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100 W. Monroe St.

CLEVELAND, OHIO
1022 Midland Bldg.

DETROIT, MICHIGAN
2011 Book Building

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Luria Building

NEW YORK, N. Y.
Woolworth Building

PITTSBURGH, PA.
Oliver Building

PUEBLO, COLORADO
334 Colorado Bldg.

READING, PENNA.
Luria Building

SAN FRANCISCO, CALIFORNIA
Pacific Gas & Elec. Co., Bldg.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

Steel prices in this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel	Nov. 14,	Nov. 7,	Oct. 17,	Nov. 15
(cents per pound)	1950	1950	1950	1949
Hot-rolled sheets	3.35	3.35	3.35	3.25
Cold-rolled sheets	4.10	4.10	4.10	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.25
Cold-rolled strip	4.21	4.21	4.21	4.038
Plate	3.50	3.50	3.50	3.40
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R-strip (No. 302)	34.50	34.50	34.50	33.00

Tim and Terneplate:

	(dollars per base box)			
Timplate (1.50 lb) cokes	\$7.50	\$7.50	\$7.50	\$7.75
Timplate, electro (0.50 lb)	6.60	6.60	6.60	6.70
Special coated mfg. terne	6.35	6.35	6.35	6.65

Bars and Shapes:

	(cents per pound)			
Merchant bars	3.45	3.45	3.45	3.35
Cold finished bars	4.15	4.15	4.15	3.995
Alloy bars	3.95	3.95	3.95	3.75
Structural shapes	3.40	3.40	3.40	3.25
Stainless bars (No. 302)	30.00	30.00	30.00	28.50
Wrought iron bars	9.50	9.50	9.50	9.50

Wire:

	(cents per pound)			
Bright wire	4.50	4.50	4.50	4.15

Rails:

	(dollars per 100 lb)			
Heavy rails	\$3.40	\$3.40	\$3.40	\$3.20
Light rails	3.75	3.75	3.75	3.55

Semifinished Steel:

	(dollars per net ton)			
Rerolling billets	\$54.00	\$54.00	\$54.00	\$52.00
Slabs, rerolling	54.00	54.00	54.00	52.00
Forging billets	63.00	63.00	63.00	61.00
Alloy blooms, billets, slabs	66.00	66.00	66.00	63.00

Wire Rod and Skelp:

	(cents per pound)			
Wire rods	3.85	3.85	3.85	3.40
Skelp	3.15	3.15	3.15	3.25

Price advances over previous week are printed in Heavy Type; declines appear in Italics

Pig Iron:	Nov. 14,	Nov. 7,	Oct. 17,	Nov. 15
(per gross ton)	1950	1950	1950	1949
No. 2, foundry, del'd Phila.	\$54.77	\$54.77	\$52.77	\$50.42
No. 2, Valley furnace	49.50	49.50	49.50	46.50
No. 2, Southern Cin'ti	52.58	52.58	52.58	46.08
No. 2, Birmingham	45.88	45.88	45.88	39.38
No. 2, foundry, Chicago†	49.50	49.50	49.50	46.50
Basic del'd Philadelphia	53.92	53.92	51.92	49.92
Basic, Valley furnace	49.00	49.00	49.00	46.00
Malleable, Chicago†	49.50	49.50	49.50	46.50
Malleable, Valley	49.50	49.50	49.50	46.50
Charcoal, Chicago	70.56	70.56	70.56	68.56
Ferromanganese‡	178.60	173.40	173.40	173.40

†The switching charge for delivery to foundries in the Chicago district is \$1 per ton.

‡Average of U. S. prices quoted on Ferroalloy page.

Scrap:

(per gross ton)	Heavy melt'g steel, P'gh.	\$43.75	\$43.75	\$43.75	\$32.75
Heavy melt'g steel, Phila.	38.75	41.50	38.50	25.50	
Heavy melt'g steel, Ch'go	39.75	39.75	39.75	30.50	
No. 1 hy. com. sh't, Det.	39.75	39.75	37.25	27.50	
Low phos. Young'n	46.25	46.25	46.25	36.75	
No. 1 cast, Pittsburgh	60.75	59.75	54.75	39.50	
No. 1 cast, Philadelphia	55.50	54.50	51.50	38.00	
No. 1 cast, Chicago	60.50	58.50	54.50	45.00	

Coke: Connellsville:

(per net ton at oven)	Furnace coke, prompt	\$14.25	\$14.25	\$14.25	\$14.25
Foundry coke, prompt	16.75	16.75	16.75	16.75	15.75

Nonferrous Metals:

(cents per pound to large buyers)	Copper, electro, Conn.	24.50	24.50	24.50	18.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625	18.625
Tin Straits, New York	\$1.33†	\$1.52*	\$1.125	94.00	
Zinc, East St. Louis	17.50	17.50	17.50	9.75	
Lead, St. Louis	16.80	16.80	15.80	12.55	
Aluminum, virgin	19.00	19.00	19.00	17.00	
Nickel, electrolytic	51.22	51.22	51.22	42.97	
Magnesium, ingot	24.50	24.50	24.50	20.50	
Antimony, Laredo, Tex.	32.00	32.00	32.00	32.00	

†Tentative. *Revised.

Composite Prices

Finished Steel Base Price

Nov. 14, 1950	3.837¢ per lb.
One week ago	3.837¢ per lb.
One month ago	3.837¢ per lb.
One year ago	3.705¢ per lb.

High	Low
1950.... 3.837¢ Jan. 3	3.837¢ Jan. 3
1949.... 3.837¢ Dec. 27	3.3705¢ May 3
1948.... 3.721¢ July 27	3.193¢ Jan. 1
1947.... 3.193¢ July 29	2.848¢ Jan. 1
1946.... 2.848¢ Dec. 31	2.464¢ Jan. 1
1945.... 2.464¢ May 29	2.396¢ Jan. 1
1944.... 2.396¢	2.396¢
1943.... 2.396¢	2.396¢
1942.... 2.396¢	2.396¢
1941.... 2.396¢	2.396¢
1940.... 2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939.... 2.35367¢ Jan. 3	2.26689¢ May 16
1938.... 2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937.... 2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936.... 2.32263¢ Dec. 28	2.05200¢ Mar. 10
1935.... 2.07542¢ Oct. 1	2.06492¢ Jan. 8
1932.... 1.89196¢ July 5	1.83910¢ Mar. 1
1929.... 2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Pig Iron

\$49.69 per gross ton....	\$49.69 per gross ton....
49.69 per gross ton....	49.69 per gross ton....
49.36 per gross ton....	49.36 per gross ton....
45.88 per gross ton....	45.88 per gross ton....

Scrap Steel

\$40.75 per gross ton....	\$40.75 per gross ton....
41.67 per gross ton....	41.67 per gross ton....
40.67 per gross ton....	40.67 per gross ton....
29.58 per gross ton....	29.58 per gross ton....

High

Low

\$41.67 Nov. 7	\$26.25 Jan. 3
43.00 Jan. 4	19.33 June 28
43.16 July 27	39.75 Mar. 9
42.58 Oct. 28	29.50 May 20
31.17 Dec. 24	19.17 Jan. 1
19.17 Jan. 2	18.92 May 22
19.17 Jan. 11	15.76 Oct. 24
\$19.17	\$19.17
19.17	19.17
\$22.00 Jan. 7	\$19.17 Apr. 10
21.83 Dec. 30	16.04 Apr. 9
22.50 Oct. 3	14.08 May 16
15.00 Nov. 22	11.00 June 7
21.92 Mar. 30	12.67 June 9
17.75 Dec. 21	12.67 June 8
13.42 Dec. 10	10.33 Apr. 29
8.50 Jan. 12	6.43 July 5
17.58 Jan. 29	14.08 Dec. 8

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

GAS-FIRED INGOT MOLD DRYING EQUIPMENT

Designed by

The Carl Mayer Corporation

UPS PRODUCTION,
CUTS INITIAL COSTS

WANT TO UP YOUR INGOT MOLD-DRYING PRODUCTION as much as 100%? One user reports doing this with equipment made by The Carl Mayer Corporation of Cleveland, Ohio. This patented system eliminates costly oven casing by letting the mold be its own oven.

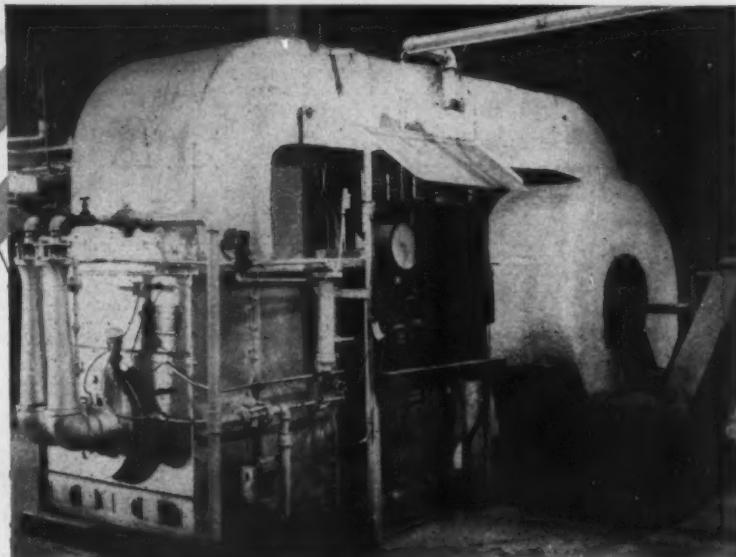
The molds, open at both ends, lined with green sand, are placed on a special Ingot Mold Heating Bench. The GAS-fired heater system forces hot air through nozzles under the molds. A perforated metal plate placed on top of the mold holds in most of the Gas-heated air which bakes the lining and returns thru ducts to the heating and pump unit. Placing and removing the molds are readily done by overhead cranes.

This successful application of GAS to solve a steel mill production problem is one more example of how GAS can work for you. Among the factors making GAS such an important industrial fuel are:

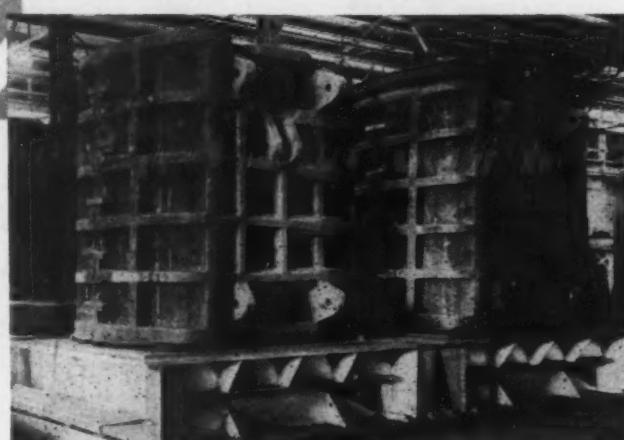
- ★ Ease of precise temperature control
- ★ Economical to use
- ★ Ready adaptability to your specialized needs.

Your Gas Company Representative knows how to put GAS to work for you, boosting production, cutting costs. Call him today.

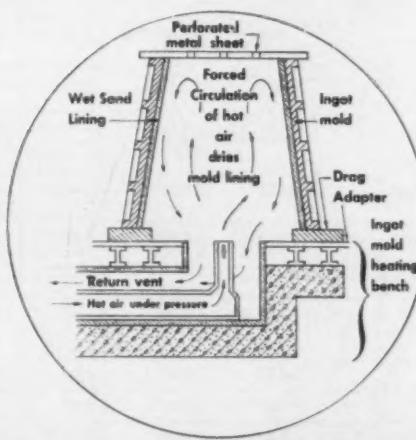
AMERICAN GAS ASSOCIATION
420 Lexington Avenue, New York 17, New York



One of a battery of 4,000,000 Btu Gas-fired recirculating air heaters, showing burners, controls and safety devices, heat delivery fan and return ducts.



Ingot molds in place on Heating Bench, ready for drying.



Schematic diagram shows how mold lining is cured, with mold acting as its own "oven", eliminating need for oven casing.



IRON AGE STEEL PRICES		Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page. Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.													
		Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middle- town	Youngs- town	Bethle- hem	Buffalo	Consho- hocken	Johns- town	Spar- rows Point	Granite City	Detroit
INGOTS Carbon forging, net ton		\$50.00 ¹													\$50.00 ¹
Alley, net ton		\$51.00 ¹⁻¹⁷													\$51.00 ¹
BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton		\$53.00 ¹	\$53.00 ¹	\$53.00 ¹				\$57.00 ¹⁸		\$53.00 ¹⁹	\$62.00 ²⁰	\$53.00 ¹⁹			
Carbon forging billets, net ton		\$63.00 ¹	\$63.00 ¹⁻⁴	\$63.00 ¹⁻⁸	\$63.00 ⁴			\$63.00 ²¹		\$63.00 ²²	\$68.00 ²³	\$63.00 ²¹			\$68.00 ²¹
Alley, net ton		\$66.00 ¹⁻¹⁷	\$66.00 ¹⁻⁴	\$66.00 ¹		\$66.00 ⁴⁻⁶			\$66.00 ²³	\$66.00 ²⁴	\$70.00 ²⁵	\$66.00 ²³			\$68.00 ²¹
PIPE SKELP	3.15 ¹							3.15 ¹⁻⁴							
WIRE RODS	3.85 ² 4.05 ¹⁸	3.85 ^{2-4.83}	3.88 ⁴	3.85 ²				3.85 ⁶				3.85 ³	3.95 ³		
SHEETS Hot-rolled (18 ga. & hvr.)	3.35 ^{1-8.9-18}	3.35 ²³	3.35 ¹⁻⁸	3.35 ¹⁻⁸				3.35 ^{1-4.6} 3.75 ¹³		3.35 ¹	3.60 ²⁶		3.35 ³	4.08 ²³	3.85 ¹² 4.15 ⁴⁷
Cold-rolled	4.10 ^{1-8.7-9.15} 5.10 ²³		4.10 ¹⁻⁸	4.10 ¹⁻⁸			4.10 ⁷	4.10 ¹⁻⁸		4.10 ³			4.10 ³	4.80 ²²	4.30 ¹¹
Galvanized (18 gage)	4.40 ^{1-8.18}		4.40 ¹⁻⁸		4.40 ⁴			4.75 ⁴⁴ 5.50 ²⁴					4.40 ³		
Enameling (12 gage)	4.40 ¹		4.40 ¹⁻⁸	4.40 ⁴			4.40 ⁷	4.40 ^{6-4.90²⁶} 5.55 ²⁴						5.10 ²³	4.70 ¹²
Long ternes (10 gage)	4.80 ¹⁻⁸		4.80 ¹				4.80 ⁷	5.30 ²⁴							
Hi Str. low alloy, h.r.	5.05 ¹⁻⁸ 5.30 ⁹	5.05 ¹	5.05 ¹⁻⁸	5.05 ¹⁻⁸	5.05 ¹⁻⁸			5.05 ¹⁻⁴ 5.30 ⁹ 5.40 ¹⁸		5.05 ³	5.05 ²⁶		5.05 ³		5.50 ¹²
Hi str. low alloy, c.r.	6.20 ¹⁻⁸ 6.45 ⁹			6.20 ¹⁻⁸	6.20 ⁴⁻⁸			6.20 ⁴ 6.45 ⁸		6.20 ³			6.20 ³		6.05 ¹²
Hi str. low alloy, galv.	6.75 ¹												6.75 ³		
STRIP Hot-rolled	3.25 ^{5-7.9} 3.50 ²⁸ 3.75 ¹⁻⁵⁸	3.25 ⁵⁻⁸	3.25 ¹⁻⁸	3.25 ²				3.25 ^{1-4.6} 3.75 ¹³		3.25 ³	3.50 ²⁶		3.25 ³	3.45 ¹⁹ 4.08 ⁴⁷	3.88 ²³
Cold-rolled	4.15 ^{5-7.9} 4.85 ²³⁻⁵⁸ 4.50 ²⁶	4.30 ⁸	4.30 ⁸	4.15 ²⁻⁸			4.15 ⁷	4.15 ^{4-6.48} 4.85 ¹³⁻⁴⁰ 4.75 ⁴⁹		4.15 ³			4.15 ³	4.35 ¹³ 4.95 ⁴⁷ 5.10 ⁸¹⁻⁸¹	
Hi str. low alloy, h.r.	5.50 ⁹			4.95 ¹⁻⁶⁻⁸	4.95 ⁵			4.95 ¹⁻⁴ 5.20 ⁹ 5.30 ¹³		4.95 ³	4.95 ²⁶		4.95 ³		5.40 ¹²
Hi Str. low alloy, c.r.	6.45 ⁹				6.20 ²⁻⁸			6.20 ⁴ 6.45 ⁸		6.40 ³			6.40 ³		6.40 ¹²
TINPLATE¹ Cokes, 1.50-lb base box 1.25 lb, deduct 20¢	\$7.50 ¹⁻⁸ 9.18		\$7.50 ¹⁻⁸ 8					\$7.50 ⁴					\$7.60 ³	\$7.70 ²³	
Electrolytic 0.28, 0.36, 0.75 lb box		Deduct \$1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price													
BLACKPLATE, 28 gage Hollowware enameling	5.30 ^{1-8.18}		5.30 ¹⁻⁸				5.30 ⁴						5.40 ³	5.50 ²³	
BARS Carbon steel	3.45 ¹⁻⁸	3.45 ^{1-4.23}	3.45 ¹⁻⁸	3.45 ⁴	3.45 ⁴		3.45 ¹⁻⁴⁻⁶		3.45 ³⁻⁴		3.45 ³			3.65 ¹¹	4.05 ²³
Reinforcing ¹	3.45 ¹⁻⁸	3.45 ⁴	3.45 ¹⁻⁸	3.45 ⁴			3.45 ¹⁻⁴⁻⁶		3.45 ³⁻⁴		3.45 ³				4.05 ²³
Cold-finished	4.15 ²⁻⁸ 17.62-69.71	4.15 ²⁻²³ 69.78	4.15 ²⁻⁷³ 74	4.15 ²⁻⁸¹ 61	4.15 ⁴⁻²³⁻⁸⁷ 32.82		4.15 ⁶⁻⁴⁰⁻⁸⁷		4.15 ⁷⁰						4.35 ¹³ 4.35 ²⁴
Alley, hot-rolled	3.95 ¹⁻¹⁷	3.95 ^{1-4.23}	3.95 ¹⁻⁸		3.95 ⁴		3.95 ¹⁻⁶⁻²³	3.95 ³	3.95 ³⁻⁴		3.95 ³				4.25 ¹³ 4.10 ⁴¹
Alley, cold-drawn	4.80 ²⁻¹⁷ 62.69-71	4.80 ²⁻²³ 69.78	4.80 ⁴⁻⁷³ 74	4.90 ²⁻⁶¹	4.90 ⁴⁻⁴²⁻⁸³		4.90 ⁶⁻³⁵⁻⁸⁷	4.90 ³	4.90 ³⁻⁷⁰						5.05 ²⁴
Hi str. low alloy, h.r.	5.20 ¹⁻⁸		5.20 ¹⁻⁸	5.20 ⁴			5.20 ² 5.45 ⁸	5.20 ³	5.20 ³		5.20 ³				5.65 ¹²
PLATE Carbon steel	3.50 ¹⁻⁸	3.50 ¹	3.50 ¹⁻⁸	3.50 ⁴			3.50 ¹ 3.75 ¹³		3.50 ³	3.75 ²⁶	3.50 ³	3.50 ³	4.20 ²³	3.75 ¹²	
Floor plates	4.55 ¹	4.55	4.55 ³	4.55 ⁵						4.55 ²⁶					
Alley	4.40 ¹	4.40 ¹	4.40 ¹				4.75 ¹³		4.55 ²⁶	4.40	4.40 ³				
Hi Str. low alloy	5.35 ¹⁻⁸	5.35 ¹	5.35 ¹⁻⁸	5.35 ⁴⁻⁵			5.60 ⁹ 5.70 ¹³		5.35 ²⁶	5.35 ³	5.35 ³			5.85 ¹²	
SHAPES, Structural	3.40 ¹⁻⁸⁻⁹	3.40 ¹⁻²³	3.40 ¹⁻⁸⁻⁸					3.45 ³	3.45 ³		3.45 ³				4.05 ²³
Hi str. low alloy	5.15 ¹⁻⁸	5.15 ¹	5.15 ¹⁻⁸⁻⁸				5.40 ⁶	5.20 ³	5.20 ³		5.20 ³				
MANUFACTURERS' WIRE Bright	4.50 ²⁻⁸ 4.75 ¹⁸	4.50 ²⁻⁴⁻¹² 34 4.80 ²³		4.60 ²⁻⁷⁷			4.50 ⁶	Kokomo = 4.60 ²³		4.50 ³	4.60 ³	Duluth = 4.50 ¹ Pueblo = 4.75 ¹¹		5.10 ²³	
PILING, Steel Sheet	4.20 ¹⁻⁹	4.20 ¹							4.20 ³						

Smaller numbers indicate producing companies. See key at right.
Prices are in cents per lb unless otherwise noted. Extras apply.

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		IRON AGE STEEL PRICES	
			F=\$78.00		INGOTS Carbon forging, net ton	
	\$58.00 ¹¹		F=\$77.00		Alloy, net ton	
	\$53.00 ¹¹		F=\$72.00 ¹⁹		BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton	
	\$71.00 ¹¹	\$83.00 ¹¹	F=\$82.00 ¹⁹	Geneva=\$83.00 ¹⁸	Carbon forging billets, net ton	
	\$74.00 ¹¹		F=\$85.00 ¹⁹		Alloy net ton	
	4.25 ¹¹	3.85 ¹¹	SF=4.50 ²⁴ LA=4.55 ²⁴ -63	Portsmouth=3.05 ²⁹ Worcester=4.15 ²	PIPE SKELP	
	3.35 ¹¹		SF, LA=4.05 ²⁴ F=4.25 ¹⁹	Ashland=3.35 ⁷ Niles=3.50 ²⁴ , Geneva=3.45 ¹⁸	WIRE RODS	
	4.10 ¹¹		SF=5.05 ²⁴ F=5.00 ¹⁹		SHEETS Hot-rolled (18 ga. & hvr.)	
	4.40 ¹¹		SF, LA=5.15 ²⁴	Ashland=4.40 ⁷ Kakomo=4.50 ²⁴	Cold-rolled	
	4.40 ¹¹				Galvanized (10 gage)	
					Enameling (12 gage)	
					Long ternes (10 gage)	
			5.05 ¹¹	F=6.00 ¹⁹	Hi str. low alloy, h.r.	
				F=7.05 ¹⁹	Hi str. low alloy, c.r.	
	1.00 ¹¹	2.00 ¹¹	SF, LA=4.00 ²⁴ -63 F=4.40 ¹¹ , S=4.25 ¹¹	Ashland=3.25 ⁷ Atlanta=3.80 ¹⁸ Minnequa=4.30 ¹⁴	Hi str. low alloy, galv.	
			F=5.75 ¹⁹ LA=5.85 ²⁷	New Haven=4.65 ⁷ , 5.35 ²⁸ Trenton=5.00 ¹⁸	STRIP Hot-rolled	
		4.95 ¹¹	F=5.90 ¹⁹		Cold-rolled	
			F=6.95 ¹⁹		Hi str. low alloy, h.r.	
		7.60 ¹¹	SF=8.25 ²⁴		Hi str. low alloy, c.r.	
					TINPLATE Cokes, 1.50-lb base box 1.25 lb, deduct 20¢	
					Electrolytic 0.25, 0.50, 0.75 lb box	
					BLACKPLATE, 29 gage Hollowware enameling	
	4.05 ¹¹	3.85 ¹¹	3.45 ¹¹	SF, LA=4.15 ²⁴ LA=4.15 ²⁵	BARS Carbon steel	
	4.05 ¹¹	3.85 ¹¹	3.45 ¹¹	SF, S=4.20 ¹¹ F=4.10 ¹¹	Reinforcing:	
					Cold-finished	
	4.05 ¹¹	4.35 ¹¹		LA=5.00 ²² F=4.95 ¹⁹	Alloy, hot-rolled	
					Alloy, cold-drawn	
					Hi str. low alloy, h.r.	
		5.20 ¹¹	F=6.25 ¹⁹		PLATE Carbon steel	
	3.90 ¹¹	3.50 ¹¹		Clayton=3.90 ²⁹ Coatesville=3.90 ²¹ Harrisburg=4.25 ²⁸	Floor plates	
					Alloy	
			F=5.40 ¹⁹	Geneva=5.35 ¹⁸	Hi str. low alloy	
		5.35 ¹¹	F=5.95 ¹⁹		SHAPES, Structural	
	4.00 ¹¹	3.80 ¹¹	3.40 ¹¹	SF=3.95 ²² LA=4.00 ²⁴ -63	Fontana=5.75 ¹⁹ Geneva=5.15 ¹⁶	Hi str. low alloy
					Portsmouth=4.50 ²⁹ Worcester=4.80 ²	MANUFACTURERS' WIRE Bright

Notes: ¹Special coated mfg ternes deduct \$1.15 from 1.50-lb coke base box price.
Cap-making quality blackplate, 55 to 128-lb, deduct \$1.90 from 1.50-lb coke base box.
²Straight lengths only from producer to fabricator.

KEY TO STEEL PRODUCERS

With Principal Offices

- Carnegie-Illinois Steel Corp., Pittsburgh
- American Steel & Wire Co., Cleveland
- Bethlehem Steel Co., Bethlehem
- Republic Steel Corp., Cleveland
- Jones & Laughlin Steel Corp., Pittsburgh
- Youngstown Sheet & Tube Co., Youngstown
- Armco Steel Corp., Middletown, Ohio
- Inland Steel Co., Chicago
- Weirton Steel Co., Weirton, W. Va.
- National Tube Co., Pittsburgh
- Tennessee Coal, Iron & R. R. Co., Birmingham
- Great Lakes Steel Corp., Detroit
- Sharon Steel Corp., Sharon, Pa.
- Colorado Fuel & Iron Corp., Denver
- Wheeling Steel Corp., Wheeling, W. Va.
- Geneva Steel Co., Salt Lake City
- Crucible Steel Co. of America, New York
- Pittsburgh Steel Co., Pittsburgh
- Kaiser Steel Corp., Oakland, Calif.
- Portsmouth Div., Detroit Steel Corp., Detroit
- Lukens Steel Co., Coatesville, Pa.
- Granite City Steel Co., Granite City, Ill.
- Wisconsin Steel Co., South Chicago, Ill.
- Columbia Steel Co., San Francisco
- Copperweld Steel Co., Glassport, Pa.
- Alan Wood Steel Co., Conshohocken, Pa.
- Collif. Cold Rolled Steel Corp., Los Angeles
- Allegheny Ludlum Steel Corp., Pittsburgh
- Worth Steel Co., Claymont, Del.
- Continental Steel Corp., Kokomo, Ind.
- Rotary Electric Steel Co., Detroit
- Laclede Steel Co., St. Louis
- Northwestern Steel & Wire Co., Sterling, Ill.
- Keystone Steel & Wire Co., Peoria, Ill.
- Central Iron & Steel Co., Harrisburg, Pa.
- Carpenter Steel Co., Reading, Pa.
- Eastern Stainless Steel Corp., Baltimore
- Washington Steel Corp., Washington, Pa.
- Jessop Steel Co., Washington, Pa.
- Blair Strip Steel Co., New Castle, Pa.
- Superior Steel Corp., Carnegie, Pa.
- Timken Steel & Tube Div., Canton, Ohio^a
- Babcock & Wilcox Tube Co., Beaver Falls, Pa.
- Reeves Steel & Mfg. Co., Dover, Ohio
- John A. Roebling's Sons Co., Trenton, N. J.
- Simonds Saw & Steel Co., Fitchburg, Mass.
- McLouth Steel Corp., Detroit
- Cold Metal Products Co., Youngstown
- Thomas Steel Co., Warren, Ohio
- Wilson Steel & Wire Co., Chicago
- Sweet's Steel Co., Williamsport, Pa.
- Superior Drawn Steel Co., Monaca, Pa.
- Tremont Nail Co., Wareham, Mass.
- Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
- Ingersoll Steel Div., Chicago
- Phoenix Iron & Steel Co., Phoenixville, Pa.
- Fitzsimmons Steel Co., Youngstown
- Stanley Works, New Britain, Conn.
- Universal-Cyclops Steel Corp., Bridgeville, Pa.
- American Cladmetals Co., Carnegie, Pa.
- Cuyahoga Steel & Wire Co., Cleveland
- Bethlehem Pacific Coast Steel Corp., San Francisco
- Gillansbee Steel Corp., Pittsburgh
- Niles Railing Mill Co., Niles, Ohio
- Atlanta Steel Co., Atlanta
- Acme Steel Co., Chicago
- Joslyn Mfg. & Supply Co., Chicago
- Detroit Steel Corp., Detroit
- Wyckoff Steel Co., Pittsburgh
- Bliss & Laughlin, Inc., Harvey, Ill.
- Columbia Steel & Shaving Co., Pittsburgh
- Cumberland Steel Co., Cumberland, Md.
- La Salle Steel Co., Chicago
- Monarch Steel Co., Inc., Hammond, Ind.
- Empire Steel Co., Mansfield, Ohio
- Mahoning Valley Steel Co., Niles, Ohio
- Oliver Iron & Steel Co., Pittsburgh
- Pittsburgh Screw & Bolt Co., Pittsburgh
- Standard Forging Corp., Chicago
- Driver Harris Co., Harrison, N. J.
- Detroit Tube & Steel Div., Detroit
- Reliance Div., Eaton Mfg. Co., Massillon, Ohio
- Sheffield Steel Corp., Kansas City
- Plymouth Steel Co., Detroit
- Wickwire Spencer Steel, Buffalo
- Angell Nail and Chaplet, Cleveland
- Mid-States Steel & Wire, Crawfordsville, Ind.
- Sheffield Steel Corp., Kansas City, Mo.

^aAdd 10 pct to quoted prices

STAINLESS STEELS

Product	Base prices, in cents per pound. f.o.b. producing point									
	301	302	303	304	318	321	347	410	418	430
Ingots, rerolling.....	13.75	14.50	16.00	15.50	23.75	19.25	21.00	12.25	14.25	12.50
Slabs, billets, rerolling.....	18.00	19.25	21.25	20.25	31.25	25.50	27.75	16.00	19.50	16.25
Forg. discs, die blocks, rings.....	32.00	32.00	34.50	33.50	50.50	38.00	42.50	26.00	26.50	29.50
Billets, forging.....	25.75	25.75	27.75	27.00	40.50	30.50	34.25	21.00	21.50	21.50
Bars, wire, structural.....	30.00	30.00	32.50	31.50	47.50	35.50	40.00	24.50	25.00	25.00
Plates.....	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50	26.50
Sheets.....	39.00	39.00	41.00	41.00	54.50	47.00	51.50	34.50	35.00	37.00
Strip, hot-rolled.....	25.50	27.00	31.25	29.00	47.25	35.75	40.00	22.50	23.25	23.00
Strip, cold-rolled.....	32.00	34.50	38.00	36.50	58.50	48.00	50.00	28.50	35.00	29.00

STAINLESS STEEL PRODUCING POINTS—Sheets: Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38, 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 46.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13; Butler, Pa., 7.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Worth, Ind., 67.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

Plates: Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

Forged discs, die blocks, rings: Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 28. Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1.

* Add 10 pct to quoted prices.

ELECTRICAL SHEETS

22 gage, HR cut lengths, f.o.b. mill

	Cents per lb.
Armature	*6.20
Electrical	*6.70
Motor	*7.95
Dynamo	8.75
Transformer 72	9.30
Transformer 65	9.85
Transformer 58	10.55
Transformer 52	11.35

PRODUCING POINTS—Beech Bottom, W. Va., 15; Brackenridge, Pa., 28; Foliansbee, W. Va., 63; Granite City, Ill., 22*, add 70¢; Indiana Harbor, Ind., 8; Mansfield, Ohio, 75; Niles, Ohio, 64, add 30¢; Vandergrift, Pa., 1; Warren, Ohio, 4; Zanesville, Ohio, 7.

MERCHANT WIRE PRODUCTS

Base Column
Pittsburgh,

To dealers, f.o.b. mill	Calif.
Std. & coated nails	106
Woven wire fence	116
Fence posts, carload	116
Single loop bale ties	113
Gal. barbed wire	126
Twisted barbless wire	126
	146

* Pgh., Chi., Duluth; Worcester, 6 columns higher; Houston, 8 columns higher; Kansas City, 12 columns higher +15% gage and heavier. §§ Aliquippa, 4 col. higher. †† Duluth, Joliet, Johnstown, 112. ‡ Sterling, Ill., 6 columns higher; ‡‡ Sterling, Ill., 2 columns higher.

Base per Pittsburgh,

100 lb Calif.

Merch. wire annld.	\$5.35	\$6.30
Merch. wire galv.	5.60	6.55
Cut nails, carload	6.75	

+ Add 30¢ at Worcester; 20¢ at Chicago; 10¢ at Sparrows Pt. †† Less 20¢ to jobbers. ‡ Torrance 126. §§ Aliquippa add 20¢.

PRODUCING POINTS — Standard, Coated or galvanized nails, woven wire fence, bale ties, and barbed wire: Alabama City, Ala., 4; Atlanta, 65; Aliquippa, Pa., (except bale ties), 5; Bartonsville, Ill., (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30;

Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburgh, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa., (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only), 24; Worcester (nails only), 2; Houston (except bale ties), 32; Kansas City, 83.

Fence Posts: Duluth, 2; Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51.

Cut nails: Wheeling, W. Va., 15; Conshohocken, Pa., 26; Wareham, Mass., 53.

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier. No. 1 quality, per 100 lb \$3.40

Joint bars, per 100 lb 4.40

Light rails, per 100 lb 3.75

Base Price cents per lb

Track spikes† 5.60

Axles 5.25

Screw spikes 8.60

Tie plates 4.20

Pittsburg, Torr., Calif.; Seattle 4.35

Track bolts, untreated 8.85

Track bolts, heat treated, to railroads 9.10

Kansas City, 5.85¢.

PRODUCING POINTS—Standard rails:

Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Minnequa, Colo., 14; Steelton, 3.

Light rails: All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown, 3; Minnequa, 14.

Joint bars: Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3; Minnequa, Colo., 14.

Track spikes: Indiana Harbor, Ind., 6; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 5; Chicago, 4; Struthers, 6; Youngstown, 4.

Track bolts: Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 77, 78.

Axles: Indiana Harbor, Ind., 79; Johnstown, Pa., 3.

Tie plates: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburgh, Calif., 24; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24; Minnequa, Colo., 14.

Numbers after producing points correspond to steel producers. See key on Steel Price page.

PIPE AND TUBING

Base discounts, f.o.b. mills
Base price about \$200.00 per net ton

Standard, T & C

Steel, Butt-weld*

	Black	Galv
1/2-in.	40 1/2 to 38 1/2	21 to 18 1/2
5/8-in.	43 1/2 to 41 1/2	25 to 21 1/2
1-in.	46 to 44	28 to 22
1 1/8-in.	46 1/2 to 44 1/2	28 1/2 to 23
1 1/2-in.	47 to 45	29 to 23 1/2
2-in.	47 1/2 to 45 1/2	29 1/2 to 24
2 1/2-in. to 3-in.	48 to 46	30 to 27

Steel, Lap-weld

	38	16 1/2
2 1/2-in. to 3-in.	42	21
3 1/2-in. to 6-in.	43 to 40	22 to 21 1/2

Steel, seamless

	36	17 1/2 to 14 1/2
2 1/2-in. to 3-in.	39	20 1/2 to 18
3 1/2-in. to 6-in.	41	22 1/2 to 20

Wrought iron, butt-weld

	26 1/2	58 1/2
1/2-in.	+26 1/2	+58 1/2
5/8-in.	+16 1/2	+47 1/2
1 & 1/8-in.	+10 1/2	+38 1/2
1 1/2-in.	+4 1/2	+35
2-in.	+4	+34 1/2

Wrought iron, lap-weld

	13 1/2	42 1/2
2-in.	+13 1/2	+42 1/2
2 1/2-in. to 3 1/2-in.	+11	+38
4-in.	+6	+32
4 1/2-in. to 8-in.	+8	+33 1/2
9 to 12-in.	+18	+43

Extra Strong, Plain Ends

Steel, butt-weld

	39 1/2 to 37 1/2	21 1/2 to 17 1/2
3/4-in.	43 1/2 to 41 1/2	25 1/2 to 21 1/2
1-in.	45 1/2 to 43 1/2	28 1/2 to 23 1/2
1 1/8-in.	46 to 44	29 to 24 1/2
1 1/2-in.	46 1/2 to 44 1/2	29 1/2 to 25
2-in.	47 to 45	30 to 25 1/2
2 1/2-in. to 3-in.	47 1/2 to 45 1/2	30 1/2 to 23 1/2

Steel, lap-weld

	37	15 1/2
2 1/2-in. to 3-in.	42	21
3 1/2-in. to 6-in.	44 1/2 to 41 1/2	23 1/2 to 21

Steel, seamless

	35	17 1/2 to 14 1/2
2 1/2-in. to 3-in.	38	21 1/2 to 18
3 1/2-in. to 6-in.	42 1/2	25 to 20

Wrought iron, butt-weld

	22	52 1/2
1/2-in.	+22	+52 1/2
5/8-in.	+15 1/2	+46 1/2
1 & 1/8-in.	+5 1/2	+34 1/2

Wrought iron, lap-weld

	10 1/2	39
2 1/2-in. to 4-in.	+1	+27 1/2
4 1/2-in. to 6-in.	+5	+32
7 & 8-in.	list	+27

Threads only, butt, lapweld and seamless pipe, 1 pt higher disc. (lower price). Plain ends, butt, lapweld and seamless, 3 in. & under, 3 pt higher disc. Lapweld, seamless

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb. (Metropolitan area delivery, add 2¢ to base price except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul (*), add 15¢; Philadelphia, add 25¢; Chicago, add 30¢).

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS				
	Hot-Rolled	Cold-Rolled (15 gauge)	Galvanized (10 gauge)	Hot-Rolled	Cold-Rolled			Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4015 As-rolled	Hot-Rolled, A 4140 Ann.	Hot-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140 Ann.
Baltimore	5.15	6.30	6.55	5.50	5.10	5.40	5.60	5.50	5.10	5.10	5.00	5.00	11.12	11.49
Birmingham*	5.15 ¹⁰	6.35	6.65	5.50 ¹¹	5.10	5.55	5.25	5.10	5.10	5.10	5.00	5.00	11.15	11.48
Boston	5.75	6.80 ¹⁰	6.94 ⁹	5.70	6.90	6.00	5.75	6.00	6.10	6.10	6.00	6.00	10.00	11.00
Buffalo	5.15	5.95	6.04	5.41	7.27	5.85	5.35	5.15	5.75	5.75	5.60	5.60	11.05	11.38
Chicago*	5.15	6.20	6.35	5.10	6.30	5.40	5.25	5.10	5.65	5.25	5.55	5.55	10.70	11.00
Cincinnati*	5.42	5.90	6.38	5.35	5.10	5.70	5.64	5.35	5.90	5.90	5.80	5.80	11.05	11.38
Cleveland	5.15	5.95	7.00	5.24	6.35	5.52	5.37	5.12	5.75	5.38	5.60	5.60	10.81	11.11
Detroit	5.33	6.08	7.00	5.49	6.43	5.50	5.64	5.39	5.91	5.58	5.86	5.86	11.01	11.31
Houston	6.00	6.33	6.30	6.10	6.00	6.00	5.95	6.10	7.00	10.35	10.50	10.50	11.50	11.98
Indianapolis	5.75	6.80 ¹⁰	7.00	5.70	6.95	6.00	5.85	5.70	6.35	6.35	6.15	6.15	11.30	11.60
Kansas City	5.75	6.85 ¹⁰	7.00	5.70	6.95	6.00	5.85	5.70	6.35	6.35	6.15	6.15	11.30	11.60
Los Angeles	5.90	7.48	7.70 ²	5.95	6.70 ¹⁰	6.00	5.90	5.90	7.00	7.00	10.75	10.75	12.45	12.78
Memphis	5.93	6.88	6.80	5.98	6.80	6.00	6.93	6.88	6.51	6.51	6.35	6.35	11.05	11.14
Milwaukee	5.29	6.09	6.04	5.24	6.32	5.54	5.39	5.24	5.89	5.39	5.89	5.89	10.84	11.14
New Orleans*	5.50 ¹	6.75	6.88 ¹	5.65 ¹	6.80	5.85	5.85 ¹	5.85 ¹	6.75	6.80	6.75	6.75	11.30	11.60
New York	5.52	6.64	7.54 ²	5.64	6.78	5.98	5.68	5.67	6.44	6.44	6.00	6.00	11.05	11.38
Norfolk	6.10 ¹³	7.00	6.30 ¹³	6.15 ¹³	6.20 ¹³	6.15 ¹³	6.20 ¹³	6.15 ¹³	7.20 ¹³	7.20 ¹³	6.75	6.75	11.05	11.38
Philadelphia*	6.05	6.20	6.85 ³	5.85	6.29	5.65	5.45	5.60	6.21	6.35	6.00	6.00	10.80	11.10
Pittsburgh	5.15	5.95	6.00	5.20	5.85	5.35	5.25	5.10	5.75	5.25	5.55	5.55	10.70	11.00
Portland	6.00	6.40 ⁴	6.00	6.00	6.40 ⁴	6.50	6.45	6.00	12.00 ¹³	12.00 ¹³	11.00 ¹³	11.00 ¹³	12.45	12.78
Salt Lake City	6.85	6.70	7.45	6.75	7.10 ³	5.90	7.35 ⁴	6.75	6.75	6.75	6.75	6.75	11.05	11.38
San Francisco*	6.20	7.00 ³	7.75 ²	6.15	7.05 ¹⁰	6.10	6.00	6.00	7.55	7.55	10.75	10.75	12.45	12.78
Seattle	6.80 ⁴	8.15 ²	8.40 ²	6.85 ⁴	8.35 ⁴	8.20 ⁴	8.35 ⁴	8.20 ⁴	8.50 ¹⁴	8.50 ¹⁴	11.00 ¹⁵	11.00 ¹⁵	13.00 ¹⁶	13.00 ¹⁶
St. Louis	6.48	6.25	7.18	5.43	7.30	5.73	5.58	5.43	6.00	6.00	5.88	5.88	11.03	11.33
St. Paul*	5.71	6.51	7.41	5.66	6.16	5.98	5.81	5.88	6.31	6.31	10.11	10.11	11.28	11.58

BASE QUANTITIES (Standard unless otherwise keyed on prices.)

Hot-rolled sheets and strip, hot rolled bars and bar shapes, structural shapes, plate, galvanized sheets and cold-rolled sheets; 2000 to 9999 lb. Cold-finished bars; 2000 lb or over. Alloy bars; 1000 to 1998 lb.

All HR products may be combined to determine quantity bracket. All galvanized sheets may be combined to determine quantity bracket. CR sheets may not be combined with each other or with galv. sheets to determine quantity bracket.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 8 pct tax on freight.

PRODUCING POINT PRICES

Producing Point	PRODUCING POINT PRICES					Consuming Point	Producing Point	DELIVERED PRICES (BASE GRADES)						
	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.			Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	
Bethlehem	51.00	51.50	52.00	52.50	52.50	Boston	Everett	5.80-80	52.85	53.55	53.75	53.75	53.75	
Birmingham	45.38	45.88	46.00	46.00	46.00	Boston	Steeleton	8.90	53.05	53.75	53.75	53.75	53.75	
Buffalo	49.00	49.50	50.00	50.00	50.00	Brooklyn	4.29	52.79	53.29	53.79	53.79	53.79	53.79	
Chicago	49.00	49.50	49.50	50.00	50.00	Cincinnati	Birmingham	6.70	52.08	52.58	53.00	53.00	53.00	
Cleveland	52.00	49.50	49.50	50.00	54.00	Jersey City	Bethlehem	2.83	51.13	51.03	52.13	52.13	52.13	
Daltonfield, Tex.	45.00	46.50	46.50	46.50	46.50	Los Angeles	Geneva-Ironton	7.70	56.70	57.20	57.20	57.20	57.20	
Dayton	49.00	49.50	49.50	50.00	50.00	Los Angeles	Fontana	56.70	57.20	57.20	57.20	57.20	57.20	
Erie	49.00	49.50	49.50	50.00	50.00	Manfield	Toledo-Cleveland	3.33	49.33	49.83	49.83	50.33	50.33	
Fond du Lac	55.00	55.80	52.75	52.75	52.75	Philadelphia	Bethlehem	2.39	53.39	53.89	54.39	54.39	54.39	
Granite City	50.00	51.40	51.80	51.80	51.80	Philadelphia	Sweden	1.44	54.44	54.94	55.44	55.44	55.44	
Iron Mountain, Mich.	47.00	47.50	47.50	47.50	47.50	Philadelphia	Steeleton	3.09	54.09	54.59	55.09	55.59	56.00	
Iron Mountain, Mich.	47.00	47.50	47.50	47.50	47.50	Rochester	Buffalo	2.63	51.63	52.13	52.63	52.63	52.63	
Iron Mountain, Mich.	47.00	47.50	47.50	47.50	47.50	San Francisco	Geneva-Ironton	7.70	56.70	57.20	57.20	57.20	57.20	
Iron Mountain, Mich.	47.00	47.50	47.50	47.50	47.50	San Francisco	Fontana	7.70	56.70	57.20	57.20	57.20	57.20	
Iron Mountain, Mich.	47.00	47.50	47.50	47.50	47.50	Seattle	Geneva-Ironton	7.70	56.70	57.20	57.20	57.20	57.20	
Iron Mountain, Mich.	47.00	47.50	47.50	47.50	47.50	Seattle	Fontana	7.70	56.70	57.20	57.20	57.20	57.20	
Iron Mountain, Mich.	47.00	47.50	47.50	47.50	47.50	St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	49.65	49.65	49.65
Iron Mountain, Mich.	47.00	47.50	47.50	47.50	47.50	St. Louis	Syracuse	3.58	52.98	53.08	53.58	53.58	53.58	53.58

* Monessen, \$51.00.
Producing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 3¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢

per ton for each 0.50 pct manganese content in excess of 1.00 pct. \$2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.01 to 6.50 pct C/L per g.t., f.o.b. Jackson, Ohio—\$59.50; f.o.b. Buffalo, \$60.75. Add \$1.50 per ton for each additional 0.50 pct Si up to 17 pct.

Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add \$1.00 per ton for 0.75 pct or more P. Bessemer ferro-silicon prices are \$1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus \$62.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, \$70.56. High phosphorus charcoal pig iron is not being produced.

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ARCOS

development in
LOW HYDROGEN
ELECTRODES

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You'll be dollars ahead if you put ARCOS' specialized experience in high tensile welding to work on your jobs. ARCOS has pioneered in the development of low hydrogen electrodes and now offers its Tensilend series to supplement its Manganend and Nickend grades. This now makes available the most complete line of low hydrogen electrodes with the widest range of applications in the high tensile field.

Special stainless type coatings; baking and packing to reduce moisture absorption after delivery; and other rigid quality controls assure you of "high-test" performance in the shop and in the field. There's no need for preheating (even in heavy sections) and underbead cracking has been eliminated. If you run up against any problems in welding high strength steels, we'll be glad to give any help we can.

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Specialists in Stainless, Low Alloy and Non-Ferrous Electrodes

IRON AGE MARKETS & PRICES
FOUNDED 1855

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

	Pct Off List	Less	Case C.
1/4 in. & smaller x 6 in. & shorter	23	35	
9/16 in. & 5/8 in. x 6 in. & shorter	26	37	
3/4 in. & larger x 6 in. & shorter	26	37	
All diam. longer than 6 in.	22	34	
Lag, all diam. x 6 in. & shorter	30	41	
Lag, all diam. longer than 6 in.	28	39	
Plow bolts	40		

Nuts, Hot Pressed, Cold Punched—Sq

	Pct Off List	Less	Less	Keg K.	Keg K.
	Reg	(Hvy)	Keg K.	Reg	(Hvy)
1/4 in. & smaller	23	35	23	35	
9/16 in. & 5/8 in.	20	32	15	28	
3/4 in. to 1 1/2 in. inclusive	23	35	10	24	
1 1/2 in. & larger	16	29	10	24	

Nuts, Hot Pressed—Hexagon

1/4 in. & smaller	33	43	29	40
9/16 in. & 5/8 in.	30	41	25	37
3/4 in. to 1 1/2 in. inclusive	27	38	20	31
1 1/2 in. & larger	30	32	15	28

Nuts, Cold Punched—Hexagon

1/4 in. & smaller	33	43	29	40
9/16 in. & 5/8 in.	30	41	25	37
3/4 in. to 1 1/2 in. inclusive	27	38	20	31

Nuts, Semi-Finished—Hexagon

	Reg	Hvy
1/4 in. & smaller	41	50
9/16 in. & 5/8 in.	36	46
3/4 in. to 1 1/2 in. inclusive	31	42
1 1/2 in. & larger	21	33
		17
		38
		Light
7/16 in. & smaller	41	50
1/2 in. thru 5/8 in.	35	45
5/8 in. to 1 1/2 in. inclusive	33	43
Broken case or keg add 15 pct.		

Stove Bolts

Packaged, steel, plain finished	56	10
Packaged, plated finish	41	10
Bulk, plain finish**		67*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets

	Base per 100 lb	Pot Off List
1/2 in. & larger	37.25	
7/16 in. & smaller		43
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.		

Cap and Set Screws

(In bulk)	Pot Off List
Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 5/8 in. x 6 in., SAE 1020, bright	53
5/16 in. thru 1 in. up to & including 6 in.	53
5/8 in. thru 5/8 in. x 6 in. & shorter	
high C double heat treat	51
5/8 in. thru 1 in. up to & including 6 in.	46
Milled studs	21
Flat head cap screws, listed sizes	43
Fillister head cap, listed sizes	43
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	57

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports)

Per gross ton

Old range, bessemer	38.10
Old range, nonbessemer	7.95
Mesabi, bessemer	7.85
Mesabi, nonbessemer	7.70
High phosphorus	7.70

After Jan. 25, 1950, increases or decreases in Upper Lake rail freight, dock handling charges and taxes are for buyers' account.

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diam. in. in.	Length in in.	Cents Per lb
GRAPHITE		
17, 18, 20	60, 72	17.00¢
8 to 16	48, 60, 72	17.00¢
7	48, 60	18.64¢
6	48, 60	19.95¢
4, 5	40	20.48¢
3	40	21.53¢
2 1/2	24, 30	22.05¢
2	24, 30	24.15¢
CARBON		
40	100, 110	7.65¢
35	65, 110	7.65¢
30	65, 84, 110	7.65¢
24	72 to 104	7.65¢
30	84, 90	7.65¢
17	60, 72	7.65¢
14	60, 72	8.16¢
10, 12	60	8.42¢
8	60	8.67¢

CLAD STEEL

Base prices, cents per pound, f.o.b. mill
Stainless-carbon Plate Sheet

No. 304, 20 pct.	
Coatesville, Pa. (21)	28.00
Washgtn, Pa. (39)	28.00
Claymont, Del. (29)	28.00
Conshohocken, Pa. (26)	24.00
New Castle, Ind. (55)	26.50 25.50
Nickel-iron	
10 pct, Coatesville (21)	31.00
Inconel-iron	
10 pct, Coatesville (21)	39.00
Monel-iron	
10 pct, Coatesville (21)	32.00
No. 302 Stainless-copper- stainless, Carnegie, Pa. (60)	77.00
Aluminized steel sheets, hot dip, Butler, Pa. (7)	7.75

* Includes annealing and pickling, or sandblasting.

TOOL STEEL

f.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.00
18	4	1	—	5	\$1.56¢
18	4	2	—	—	\$1.13
1.5	4	1.5	8	—	71.56¢
6	4	2	6	—	76.54¢
High-carbon-chromium					
Oil hardened manganese					
Special carbon					
Extra carbon					
Regular carbon					

High-carbon-chromium 57.56¢
Oil hardened manganese 32¢
Special carbon 29.5¢
Extra carbon 24.5¢
Regular carbon 21¢

Warehouse prices on and east of Mississippi are 3¢ per lb higher. West of Mississippi, 5¢ higher.

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.50¢
0.41 to 0.60 carbon	5.95¢
0.61 to 0.80 carbon	6.55¢
0.81 to 1.05 carbon	8.50¢
1.06 to 1.35 carbon	10.80¢

Worcester, add 0.30¢; Sharon, New Britain, Carnegie, New Castle, add 0.35¢; Detroit, 0.26 to 0.40 carb., add 60¢; other grades add 20¢. New Haven, 0.26 to 0.40 carb., add 85¢; other grades add 30¢.

COKE

Furnace, beehive (f.o.b. oven)	Net Ton
Connellsburg, Pa.	\$14.00 to \$14.50
Foundry, beehive (f.o.b. oven)	
Connellsburg, Pa.	\$16.50 to \$17.00
Foundry, oven coke	
Buffalo, del'd	\$25.35
Chicago, f.o.b.	21.00
Detroit, f.o.b.	23.00
New England, del'd	24.30
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	22.10
Swedeland, Pa., f.o.b.	22.00
Plaineville, Ohio, f.o.b.	23.25
Erie, del'd	\$22.29 to 22.50
Cleveland, del'd	22.62
Cincinnati, del'd	22.71
St. Paul, f.o.b.	21.00
St. Louis, f.o.b.	24.90
Birmingham, del'd	20.79

FLUORSPAR

Washed gravel fluor spar, f.o.b. cars, Rosiclar, Ill. Base price, per ton net: Effective CaF₂ content:

70% or more	\$41.00
60% or less	38.00

Prices Continued on Page 144

GREATER FOR
FASTEN FAST WITH
CLARK FASTENERS

CLARK
QUALITY INDUSTRIAL FASTENERS SINCE 1854

BOLTS



NUTS



SCREWS

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Weldit Torches have been accepted as standard by one of the divisions of the Big 3 automobile manufacturing group. Such recognition hallmarks Weldit Torches as tops in quality and performance. Shown above is the initial shipment of rugged Weldimatic No. C-47 Lightweight Blow Pipes and No. W-46-F Heavy Duty Weldimatic Welding Torches.

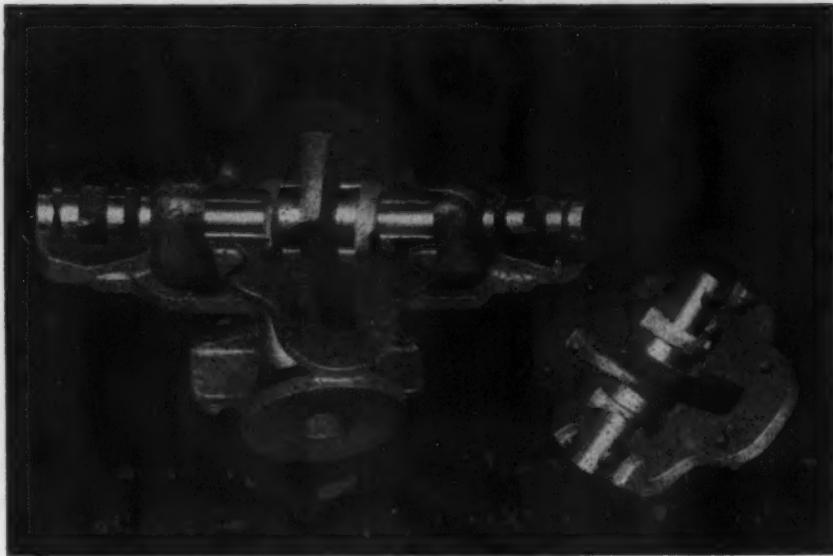
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INC.
SINCE 1918

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CORROSION... Checkmated!

WITH LEBANON STAINLESS CASTINGS



METALLURGISTS AND PRODUCTION MEN are pointing the way to corrosion control by the use of stainless alloys. These alloys range from the general purpose (19.9) to the highly specialized types, each particularly suited to service requirements. Lebanon Circle ① 22 (analysis at right) is a typical example of a stainless alloy that adds years of usefulness to any casting that must withstand corrosive attack.

Lebanon laboratory and production techniques play an important part in maintaining the high quality of our castings. Modern electric induction furnaces provide maximum flexibility of control so valuable in processing alloy material.

Our engineers are at your service, anxious always to help you solve your problems by developing entirely satisfactory castings.

If you do not have copies of our Data Sheets we will be glad to send them on to you.

LEBANON STEEL FOUNDRY • LEBANON, PA.
"In the Lebanon Valley"

Finish-machined casting of a Centrifugal Pump Casing made of Lebanon Circle ① 22 Stainless Steel.

LEBANON CIRCLE ① 22 NOMINAL ANALYSIS

Carbon Max.	0.08
Silicon	1.25
Manganese	0.75
Chromium	19.50
Nickel	9.00

NOMINAL PHYSICAL PROPERTIES

Tensile Strength	75,000
Yield Point	36,000
Elongation in 2"-%	50
Brinell Hardness	135

HEAT TREATMENT: Water Quenched

LEBANON
ALLOY AND STEEL

ALLOY AND STEEL

Castings



REFRACTORIES

Fire Clay Brick	(F.o.b. works) Carloads, Per 1000
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5)	594.60
No. 1 Ohio	88.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	8.00
No. 2 Ohio	79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50)	13.71

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$94.60
Childs, Pa.	59.00
Hays, Pa.	100.10
Chicago District	104.50
Western Utah and Calif.	111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago	111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	16.50
Silica cement, net ton, bulk, Hays, Pa.	18.70
Silica cement, net ton, bulk, Ensley, Ala.	17.50
Silica cement, net ton, bulk, Chicago District	17.00
Silica cement, net ton, bulk, Utah and Calif.	24.75

Chrome Brick

Per Net Ton	
Standard chemically bonded, Balt., Chester	\$77.00

Magnesite Brick

Standard, Baltimore	\$99.00
Chemically bonded, Baltimore	85.00

Grain Magnesite

St. % -in. grain	
Domestic, f.o.b., Baltimore, in bulk fines removed	\$62.70
Domestic, f.o.b., Chewelah, Wash., in bulk	36.30
in sacks	41.50

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk, Midwest, add 10¢; Missouri Valley, add 20¢	\$13.00
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METAL POWDERS

Per pound, f.o.b. shipping point, in lots, for minus 100 mesh.	
Swedish sponge iron c.i.f. New York, ocean bags	7.4¢ to 9.0¢
Canadian sponge iron, del'd, in East	10.00
Domestic sponge iron, 98+%	
Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+ Fe	36.0¢ to 39.5¢
Electrolytic iron unannealed, minus 325 mesh, 99+ Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+ Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+ Fe	70.0¢ to \$1.15
Aluminum	29.00
Brass, 10 ton lots	30.00¢ to 33.25¢
Copper, electrolytic 10.25¢ plus metal value	
Copper, reduced 10.00¢ plus metal value	
Cadmium 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quantity	\$3.50
Lead	6.5¢ plus metal value
Manganese	52.00
Molybdenum, 99%	82.65
Nickel, unannealed	75.50
Nickel, annealed	81.50
Nickel, spherical, unannealed	78.50
Silicon	34.00
Solder powder	6.5¢ to 8.5¢ plus met. value
Stainless steel, 302	75.00
Tin	11.00¢ plus metal value
Tungsten, 99%	\$3.40
Zinc, 10 ton lots	20.50¢ to 23.85¢

CAST IRON WATER PIPE

Per net ton	
6 to 24-in., del'd Chicago	\$95.30 to \$98.50
6 to 24-in., del'd N. Y.	94.50 to 95.50
6 to 24-in., Birmingham	81.50 to 86.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	\$108.50 to \$113.00
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

Prices Continued on Page 146

"Custom-built" Quality... production line cost



HEAVY DUTY Sockets, Universal Sockets, Extensions and Adapters

• "Custom-built" to meet specific operating conditions, Apex heavy-duty sockets, universal sockets, extensions and adapters are available in thousands of standard types and sizes. Precisely machined from high carbon, electric furnace alloy steel, Apex tools are cold broached and heat treated to withstand strains and shocks, to provide longer, trouble-free service life.

It costs no more to get the benefits

of Apex "custom quality" because the freedom from excessive tool breakage and quick wear-out pays dividends in reduced down-time, increased productive output. Special application? . . . just send your sketch or blueprint—we'll quote promptly.

Catalog 19 lists this complete line of Apex production tools . . . a note, on your company letterhead please, will bring your copy.



sockets, extensions, adapters

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SAFETY FRICTION TAPPING CHUCKS • VERTICAL FLOAT TAPPING CHUCKS • SELF-RELEASING AND ADJUSTABLE STUD SETTERS • POWER
BITS FOR PHILLIPS, FREARSON, SLOTTED HEAD, CLUTCH HEAD, HEX HEAD AND SOCKET SCREWS • HAND DRIVERS FOR PHILLIPS, FREARSON
AND CLUTCH HEAD SCREWS • AIRCRAFT AND INDUSTRIAL UNIVERSAL JOINTS • SOCKETS AND UNIVERSAL JOINT SOCKET WRENCHES.

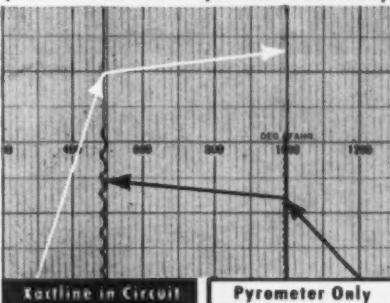
Automatic

"STRAIGHT-LINE"
TEMPERATURE CONTROL
with
XACTLINE

ELIMINATE Overshooting Undershooting

Are you going to continue to put up with that troublesome overshooting and undershooting inherent in your conventional pyrometer control—especially when it is so easy to eliminate that saw-tooth effect?

Put XACTLINE in the control circuit. XACTLINE anticipates the temperature changes—before they occur. And too, it nullifies the varying amounts of thermal lag, residual heat, and mechanical lag—producing a short on-off cycle resulting in "Straight-Line" temperature control. This performance is possible because there is no dependence upon mechanical parts—XACTLINE operates electrically.



Exact reproduction of temperature chart for a heating process showing the comparison of the "Straight-Line" temperature control produced by XACTLINE and the saw-tooth curve obtained with only conventional control.

XACTLINE is applicable to any indicating or recording pyrometer control of the millivoltmeter or potentiometer type. It should be used wherever close temperature control is required—any type of electrically heated oven, furnace, kiln, injection molding machine, and fuel-fired furnaces equipped with motor-operated or solenoid valves.

XACTLINE is a complete unit. No adjustment or coordination with the control instrument is required regardless of the size of the furnace, length of the heating cycle, or size of the load. Installation is very simple—can be either flush or surface mounted.

PRICE \$89.50 F.O.B. CHICAGO

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Specialists for 36 Years in the Heat Treating and Temperature Control Field
Dept. 16 • 3000 South Wallace St., Chicago 16, Ill.
Dept. 16 • 2035 Hamilton Ave., Cleveland 14, Ohio

IRON AGE MARKETS & PRICES

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si)
0.06% C 30.00 0.20% C 29.00
0.10% C 29.50 0.50% C 28.75
0.15% C 29.25 1.00% C 28.50
2.00% C 28.25
65-69% Cr, 4-9% C 21.50
62-66% Cr, 4-6% C, 6-9% Si 22.35

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.
Carloads 21.60
Ton lots 23.75
Less ton lots 25.25
Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.
Carloads 27.75
Ton lots 30.05
Less ton lots 31.85

Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% Max. C \$1.09
0.50% max. C 1.05
.00 min. C 1.04

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.06% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 20.50¢ per lb of contained Cr plus 11.30¢ per lb of contained Si.
Bulk 1-in. x down, 20.65¢ per lb contained Cr plus 11.50¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, dump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.
Carloads 17.90
Ton lots 21.00
Less ton lots 22.50

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads 19.25
Ton lots 21.55
Less ton lots 22.55

CMZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.
Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C
Ton lots 19.75
Less ton lots 21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.
Ton lots 16.50¢
Less ton lots 17.75¢

Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%
Carload packed 18.00¢
Ton lots to carload packed 19.00¢
Less ton lots 20.50¢

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, 1/4 in. x 12 mesh.
Ton lots 17.25
Less ton lots 18.50¢

Prices Continued on Page 148



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PROMPT
DELIVERIES...**

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RECOMMENDS
STANDARDS**

You can depend on prompt deliveries of UNBRAKO Products when you use standard sizes. For, despite shortages, stepped-up demand and other problems of the emergency, we've been able to keep full stocks of UNBRAKO "standards" on our dealers' shelves—ready for immediate delivery. And that's not all . . . Every time you use a standard size UNBRAKO it represents a substantial saving over the cost of a "special." Be sure you have our latest catalog of UNBRAKO standard products. Send for your copy of Bulletin 643-R today.

SOCKET **UNBRAKO** SCREWS

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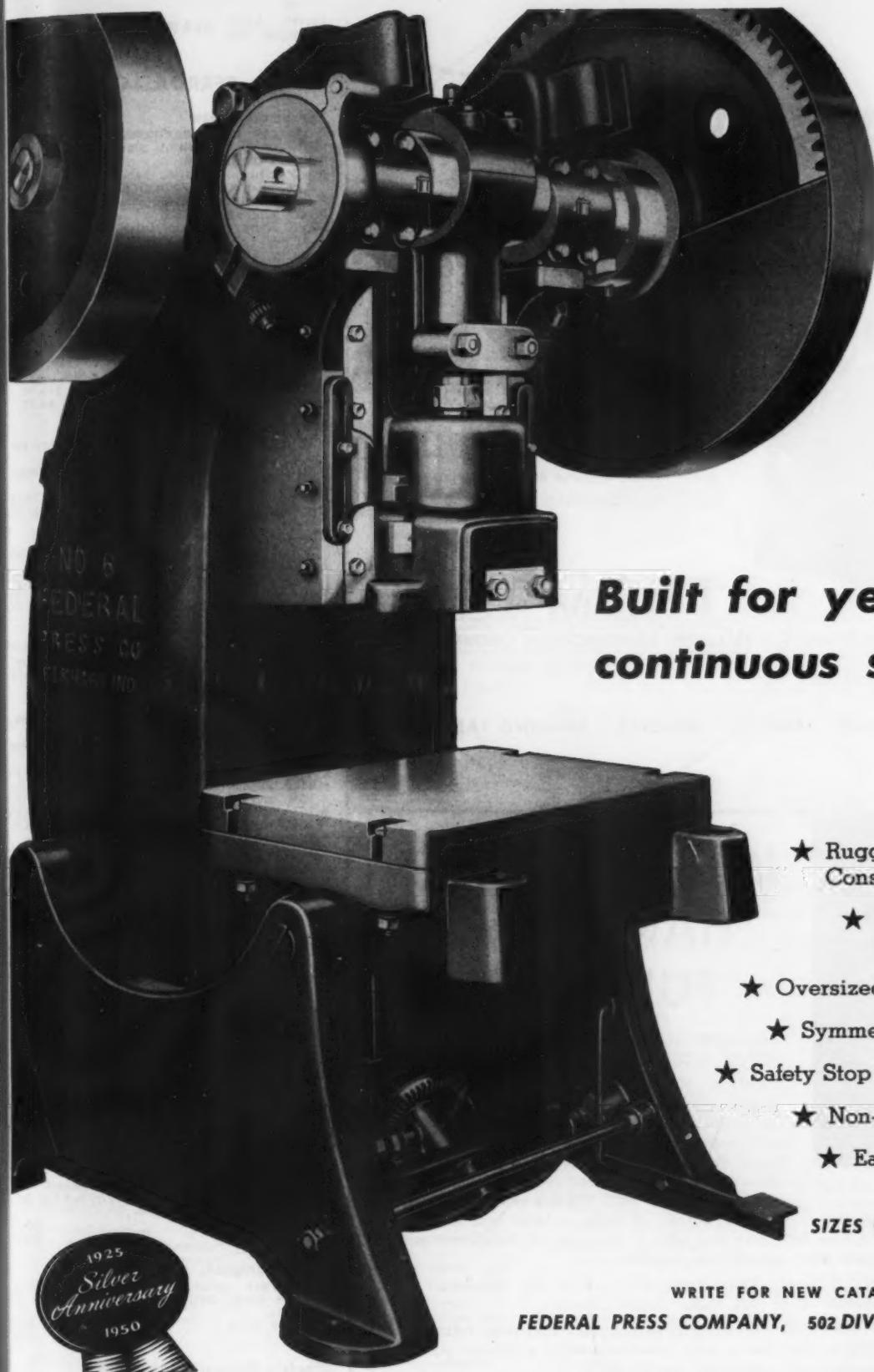
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★ Rugged Precision Construction

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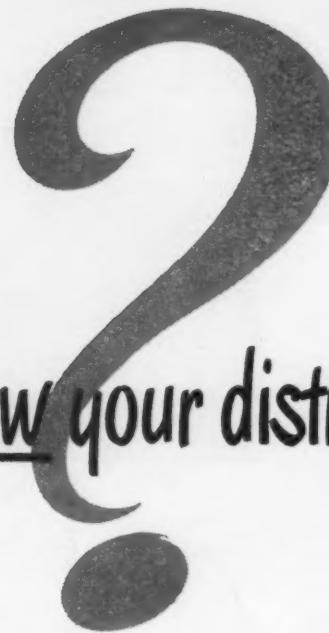
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705 Milan Street
Phone 4-2641

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Wabash 4480, 4481

CLEVELAND, Ohio

Nottingham Steel Company
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Atlantic 5100

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Logan 6-6697

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Earle M. Jorgensen Company
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Lucas 0281

VERNON:

Reliance Steel Company
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Adams 6133

MILWAUKEE, Wisconsin

KHP Milwaukee Steel Company
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Lyndhurst: Rutherford 2-8100

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Standard Pressed Steel Co., Jenkintown, Pa., uses No. 25 Grand Rapids Hydraulic Feed Surface Grinders in making the tools and dies that produce Unbrako Socket Screw Products, Flexloc Self-Locking Nuts, Hallowell Shop Equipment.



You will appreciate the micro-inch finish produced at production speeds on Grand Rapids Grinders. All Grand Rapids Hydraulic Feed Surface Grinders have these outstanding features:

1. One-piece column and base casting for vibrationless rigidity
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Your inquiry concerning your specific grinding needs will receive prompt attention. Grand Rapids Grinders include: Hydraulic Feed Surface Grinders, Universal Cutter and Tool Grinders, Hand Feed Surface Grinders, Drill Grinders, Tap Grinders, and Combination Tap and Drill Grinders.



700 Straight, S. W., Grand Rapids 4, Mich.

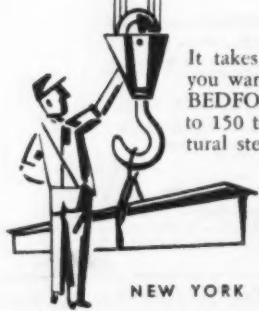


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BEDFORD, INDIANA

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IRON AGE MARKETS & PRICES

Other Ferroalloys

Alsilfer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	\$1.15
Carload	8.55¢
Ton lots	9.55¢
Calcium molybdate, 45-49%, f.o.b. Langeloft, Pa., per pound contained Mo	96¢
Ferrocolumbium, 50-60%, 2 in x D, contract basis, delivered, per pound contained Cb	53.50
Ton lots	53.50
Less ton lots	53.50
Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C, Contract basis, delivered, ton lots, 2 in x D, per lb of contained Cb plus Ta	\$2.67
Ferromolybdenum, 55-75%, f.o.b. Langeloft, Pa., per pound contained Mo	\$1.12
Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton	\$65.00
10 tons to less carload	75.00
Ferro-titanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	\$1.35
Ferro-titanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	\$1.35
Less ton lots	\$1.35
Ferro-titanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton	\$177.00
Ferrotungsten, standard, lump or 1/4 x down, packed, per pound contained W, 5 ton lots, delivered	\$2.50
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V	Openhearth
Crucible	\$3.05
High speed steel (Primos)	3.15
Molybdc oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloft, Pa., bags, f.o.b. Washington, Pa., Langeloft, Pa.	3.25
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	\$1.00
Carload, bulk, lump	11.00¢
Ton lots, bulk lump	11.50¢
Less ton lots, lump	12.50¢
Vanadium pentoxide, 88-92% V ₂ O ₅ , contract basis, per pound contained V ₂ O ₅	\$1.25
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy	\$1.00
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy	1.60¢
Carload, bulk	0.60¢
Boron Agents	
Contract prices per lb of alloy, del.	
Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	\$4.55
Bortam, f.o.b. Niagara Falls	1.50¢
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed	1.20
Ton lots, per pound	1.50¢
Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots	1.20
F.o.b. Wash., Pa.; 100 lb, up to 14% B	.75
14 to 19% B	1.20
19% min. B	1.50
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over	1.00
No. 1	\$1.00
No. 6	63¢
No. 79	50¢
Manganese—Boron 75.00% min. B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered	1.00
Ton lots	1.45
Less ton lots	1.57
Nickel—Boron 15-18% B, 1.00% max. Al 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered	1.00
Less ton lots	1.30
Silcaz, contract basis, delivered	45.00¢
Ton lots	45.00¢

• News of Industry •

Wagner Corp. Sponsors Tour

St. Louis—Following a route marked by green arrows, more than 15,000 visitors toured the entire Wagner Electric Corp. plant here recently. Purpose of the tour was to acquaint guests with the electrical and automotive products made by Wagner and production procedure.

Most of the visitors were from the city and neighboring communities. The company was founded in 1891 in a small store building.

Michigan Scrap Group Elects

Washington — The Michigan Chapter of the Institute of Scrap Iron and Steel, Inc., recently named the following officers: Edwin L. Elk, of Kastle Bros., Inc., Flint, re-elected president; Joseph Newman, first vice-president, Warren Iron & Metal Co., Detroit; Manuel Brown, second vice-president, Joe Brown & Sons, Grand Rapids; Louis Rogovein, secretary, Ace Iron & Metal Co., Detroit; and W. Kenneth McLellan, treasurer, Luria Steel & Trading Corp., Detroit.

Bay State Announces Expansion

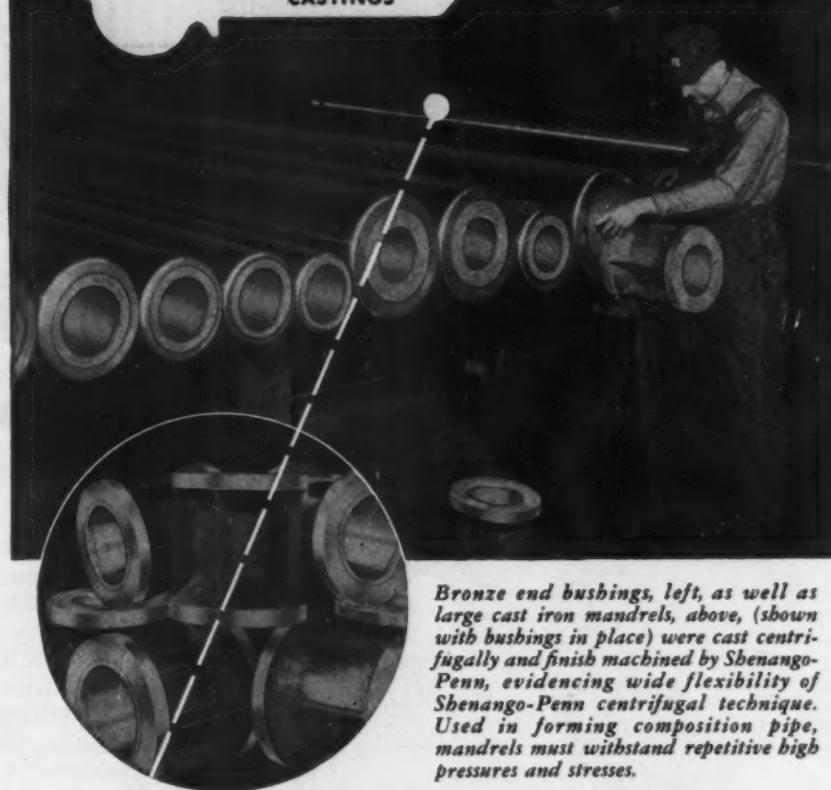
Westboro, Mass.—A \$100,000 appropriation for factory expansion, making a total of \$350,000 in 1950, has been announced by Bay State Abrasive Products Co. Part of the expansion will include 6400 sq ft of space to house a new tunnel kiln. The company also announced a 10¢ per hour wage increase for hourly employees and a 6 pct increase for salaried workers.

Sees Trend to Home Modernization

Minneapolis—Federal credit restrictions will swerve the current of spending for homes to modernization, said Tom McDonald, vice-president of the Minneapolis-Honeywell Regulator Co. The trend to home modernization will come because buyers can get a home with modern improvements by spending up to the legal \$2500 for remodeling, he said.

SHENANGO-PENN *Centrifugal*
CASTINGS

... KEY TO SAVINGS



Bronze end bushings, left, as well as large cast iron mandrels, above, (shown with bushings in place) were cast centrifugally and finish machined by Shenango-Penn, evidencing wide flexibility of Shenango-Penn centrifugal technique. Used in forming composition pipe, mandrels must withstand repetitive high pressures and stresses.

For high pressures, high stresses . . .

IF you need rolls, or any symmetrical or annular parts requiring unusual strength, uniformity, wear resistance or freedom from porosity and defects, check with Shenango-Penn. These very qualities are inherent in the carefully controlled Shenango-Penn *centrifugal* casting process. You stand to save time and money . . . to avoid needless trouble.

Check also on Shenango-Penn's

modern machining and finishing service. It combines complete facilities and years of specialized experience to meet your specifications with over-all precision . . . another time-and-money saver!

For free descriptive bulletins, for specific data on ferrous or non-ferrous work, large or small, semi or finish machined, write to . . .

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— If you figure LIFE-COSTS... you'll figure LIFE-LINE —

Life-Line
SAVES

On your conveyors

The experience of this Philadelphia plant might well be yours. Maintenance costs of motors were moderate. Nevertheless, the plant operators were continually on the lookout for ways to cut costs. Sound familiar?

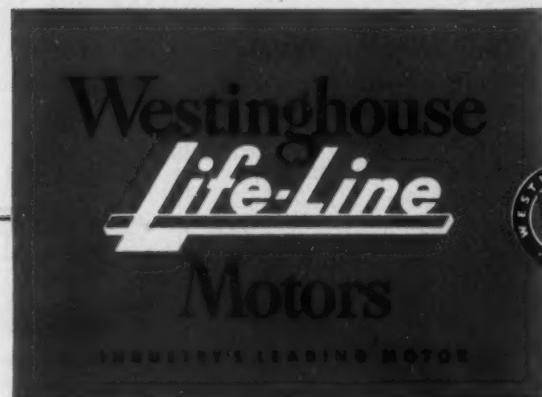
They found it in Life-Line motors. As they put it, "Life-Lines save the expense of constant lubrication. Formerly, it was necessary to have a special oiler do nothing but lubricate motors. Now, all this is eliminated. Life-Lines need no lubrication."

Unusual? No. Typical on Life-Line installations. Users all over the country say, "Life-Line motors save me money". An industry average indicates a yearly saving of \$2.70 per motor from lubrication alone.

Think what it costs to lubricate motors on your conveyors and other equipment. That's money you can save... money you can deduct from your operating expense account.

Isn't this saving worth getting? You get it with Life-Lines at no extra cost. Ask your Westinghouse representative for a copy of Motor Costs, B-4321, or write Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pennsylvania.

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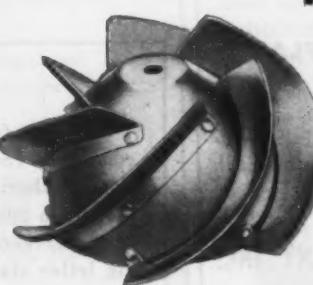
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NEWS OF USED, REBUILT AND SURPLUS MACHINERY

Pittsburgh Market—The market for fairly new equipment here is growing tighter. Demand far exceeds supply, for the reason that anybody with a recent model machine is inclined to hang onto it until the defense program crystallizes. Older machines are available, but interest in them is low. The demand for automatics and production machines continues strong, though business in recent weeks has fallen off from the early October peak. Demand for electrical equipment has slowed recently, although heavy equipment is in very heavy demand.

The consensus here is that 1950 will be a good year. If there had been no steel and coal strikes last fall and this spring to hurt business in the first half, the year would have been one of the best ever. Increased labor and repair costs, as well as higher asking prices, have forced dealer prices up. As an example of repair costs, one dealer cited a \$170 bill for welding two legs on a shear.

Situation May Ease—One major used machinery dealer has expressed the idea that the current shortage of good recent used machines is to some extent artificial. He points out that many shops, not knowing what sort of defense business to expect, are holding on to all their machines. When defense orders are more freely distributed, he feels, shops may then be willing to sell machines which they find are not required for pro-

duction of the orders they get. This may cause an easing of the market for many types of tools.

MDNA Meetings—The Detroit chapter of the Machinery Dealers' National Assn. met at the Machinery Liquidating Co. in Detroit, November 8. Harvey Goldman was the principal speaker. The Newark chapter met October 30 at the Hochman Machinery Co., Newark, at which time new members were voted on and 1950-51 committees appointed.

Advisory Committee—J. M. P. Fox, executive director of MDNA, was an observer at the first Washington meeting of the Machine Tool Industry Advisory Committee, October 25. H. B. McCoy, assistant administrator of the National Production Authority, called the industry meeting with W. L. Beck, of the NPA. Matters of priorities on steel and component parts for the building and maintenance of machine tools were discussed.

NISA Meetings—New officers of the St. Louis chapter of the National Industrial Service Assn. include W. H. Siems, Ace Electric, Saw, and Knife Co., president; A. J. Heil, Heil Electric Co., vice-president; and C. H. Schaeffer, Schaeffer Electric Co., secretary-treasurer. The Southwestern NISA chapter meets at San Antonio, Texas, December 1 and 2.

Machine Tool Inventory Begun

Copies of forms for the inventory of rebuilt and used machine tools being conducted (See THE IRON AGE, Nov. 2, p. 164) for the National Production Authority by the Machinery Dealers' National Assn. have been mailed to 2000 U. S. dealers. All dealers are reminded of the importance of this inventory, requested by William L. Beck of the NPA, whose requesting letter states: "A listing of tools . . . presently in the shops or warehouses of dealers would be of immeasurable assistance to the defense program." Dealers who did not receive copies of the forms can obtain them from the MDNA, 20 N. Wacker Drive, Chicago 6.